



**UNIVERSAL
CURRICULUM**
Treatment of Substance Use Disorders

The Universal Treatment Curriculum for
Substance Use Disorders (UTC)

Participant's Handbook

UTC 1



Introduction to the Science of Addiction

4th Edition, 2020



DAP
Drug Advisory Programme



Introduction to the Science of Addiction

Participant Manual

4th Edition - 2020



Acknowledgments

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Disclaimer

The substance use disorder treatment interventions described or referred to herein do not necessarily reflect the official position of INL or the U.S. Department of State. The guidelines in this document should not be considered substitutes for individualized client care.

4th Edition

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PARTICIPANT ORIENTATION

Introduction

Welcome! This training will provide you with an understanding of the physiology of addiction as a brain disease and teach you about the effects and consequences of psychoactive substances.

UTC 1: *Introduction to the Science of Addiction* is part of a training series developed through funding from the U.S. Department of State to the Colombo Plan Drug Advisory Programme (DAP). More information on the Colombo Plan can be found at <http://www.colombo-plan.org>.

The overall goal of the training series is to reduce the significant health, social, and economic problems associated with substance use disorders (SUDs) by building international treatment capacity through training, professionalizing, and expanding the global treatment workforce. The training prepares counselors for professional certification at the entry level by providing the latest information about SUDs and their treatment and facilitating hands-on activities to develop skills, confidence, and competence.

Congratulations for taking the time to learn more about your work!

The Training

The six modules in this training series may be delivered over 3 consecutive days or may be offered over the course of several weeks or months. Your trainers have provided you with a specific agenda.

The learning approach for this training includes:

- Trainer-led presentations and discussions;
- Frequent use of creative learner-directed activities, such as small-group and partner-to-partner exercises and presentations;
- Reflective writing exercises;
- Periodic reviews to enhance learning retention; and
- Learning assessment exercises.

Your active participation is essential to making this a positive and productive learning experience!

Goals and Objectives for UTC 1

Training goals

- To provide participants with an understanding of the physiology of addiction as a brain disease; and
- To provide participants with information about the pharmacology of psychoactive substances.

Learning objectives

Participants who complete UTC 1 will be able to:

- Name and briefly describe four classes of psychoactive substances;
- Describe the ways in which psychoactive substances may be taken;
- Define substance use disorders;
- Define physiological dependence;
- Define addiction;
- Briefly describe the ways in which substance use affects normal brain communication;
- Define and describe the concept of stigma; and
- Describe the effects and consequences of at least six psychoactive substances.

Training materials

Training materials include:

- This *Participant Manual*;
- A notebook; and

Each module of your *Participant Manual* includes:

- Training goals and learning objectives for the module;
- A timeline;
- PowerPoint slides with space for you to write notes;
- Resource Pages containing additional information or exercise instructions and materials; and
- A module summary.

The *Participant Manual* also has a glossary (Appendix A) and a list of resources (Appendix B).

Your trainers will give you a notebook to use as your personal journal. You can use this journal in a number of ways. You can note:

- Shared resources you would like to review at a later date;
- Topics you would like to read more about;
- A principle you would like to think more about;
- A technique you would like to try;
- Ways you might be able to use some of the things you're learning in your practice; and
- Possible barriers to using new knowledge.

Your trainers will also ask you to complete short writing assignments.

TAP 21 was developed in the United States to provide a common foundation on which to base training and certification of addiction professionals. The publication addresses these questions:

- What professional standards should guide counselors working with people with SUDs?
- What is an appropriate scope of practice for the field of SUD counseling?
- Which competencies are associated with positive treatment outcomes?
- What knowledge, skills, and attitudes should all SUD treatment professionals have in common?

TAP 21 can serve as a useful reference for you. Keep in mind, however, that it takes time and experience to develop counseling competence. TAP 21 represents an ideal set of goals, not a starting point. Don't get overwhelmed! You'll get there.

Getting the Most From Your Training Experience

To get the most from your training experience:

- If you have a supervisor, speak to him or her before the training begins. Find out what his or her expectations are for you.
- Think about what you want to learn from each module.
- Come to each session prepared; review the manual pages for the modules to be presented.
- Be an active participant. Participate in the exercises, ask questions, write in your journal, and think about what additional information you want.
- Speak to your supervisor (or co-workers, if you have no supervisor) after the training. Talk about what you learned to be sure you understand how the information relates to your job.

- Discuss with your supervisor or co-workers ways that you can put your learning into practice, and continue to follow up on your progress.
- **Have fun!**

U.S. DEPARTMENT OF STATE

MODULE 0



Congratulations!

“

As a participant in this training, you are part of a rapidly growing global community of substance use professionals

”



U.S. DEPARTMENT of STATE

0.2

MODULE - 0

How is this global community of substance use professionals expanding?

In the last decade, a growing number of people are:

- ✓ being trained
- ✓ being credentialed
- ✓ studying at universities with specialized addiction programs
- ✓ operating in the context of a larger drug control system
- ✓ adhering to science and research-based approaches
- ✓ joining professional substance use associations
- ✓ networking through professional associations



U.S. DEPARTMENT of STATE

0.3

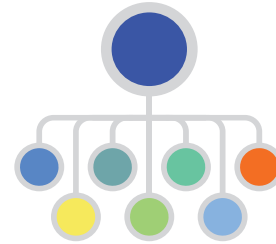
MODULE - 0

Who are the members of this global community of substance use professionals?



Individuals working worldwide in the substance use prevention and treatment fields in government, non-governmental organizations, civil society, and the private sector

Organizations that act as portals or “doorways” for individuals to join the global community



U.S. DEPARTMENT of STATE

0.4

MODULE - 0

ISSUP stands for the International Society of Substance Use Professionals

- ✓ ISSUP was launched by INL in 2015 as a global, not for profit, non-governmental organization to professionalize the global prevention and treatment workforce.
- ✓ ISSUP provides members with opportunities to share knowledge, exchange experiences, and stay abreast with current research in the field

Cont.



U.S. DEPARTMENT of STATE

0.5

MODULE - 0

ISSUP stands for the International Society of Substance Use Professionals

- ✓ There are more than 10,000 ISSUP members worldwide
- ✓ Join one of ISSUPs four levels of membership for free at: www.issup.net
- ✓ You can earn credit for this and other courses with ISSUP



U.S. DEPARTMENT of STATE

0.6

MODULE - 0



ICUDDR stands for the International Consortium of Universities for Drug Demand Reduction

- ✓ Global consortium of universities to promote academic programs that focus on science-based prevention and treatment
- ✓ Collaborative forum for individuals and organizations to support and share curricula, particularly this Universal Curriculum series, and experiences in the teaching and training of prevention and treatment knowledge

Cont.



U.S. DEPARTMENT of STATE

0.7

MODULE - 0

ICUDDR stands for the International Consortium of Universities for Drug Demand Reduction



Learn about specialized addiction programs at universities worldwide at www.icuddr.com



U.S. DEPARTMENT of STATE

0.8

MODULE - 0



THE COLOMBO PLAN



Global Centre for
Credentialing and Certification

GCCC stands for the Global Centre for Credentialing and Certification of Addiction Professionals

- ✓ The hours that you put into this training can be logged at GCCC and qualify you for exams and professional credentials
- ✓ GCCC credentials will help accelerate your career by indicating your passion and commitment to high standards

Cont.



U.S. DEPARTMENT of STATE

0.9

MODULE - 0

GCCC stands for the Global Centre for Credentialing and Certification of Addiction Professionals



Learn about how to apply the latest in research-based prevention and treatment at: www.globalccc.org



U.S. DEPARTMENT of STATE

0.10

MODULE - 0



Who funds and supports this global community of substance use professionals?

The U.S. Department of State's Bureau of International Narcotics and Law Enforcement Affairs (INL) which is funded by the U.S. taxpayer



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0.11

MODULE - 0

Where does this global community of substance use professionals meet?

- ✓ Digitally- through ISSUP and its networks and
- ✓ Face to face – through trainings, on university campus settings, and at conferences held at the global, national regional and local levels



U.S. DEPARTMENT of STATE

0.12

MODULE - 0

How does this global community of substance use professionals operate?

In the context of a larger international drug control environment that includes:

- United Nation's three international Drug Control Treaties or "Conventions"
- Commission on Narcotic Drugs (CND)
- International Narcotics Control Board (INCB)



U.S. DEPARTMENT of STATE

0.13

MODULE - 0

What are the key international organizations which operate in the context of this larger drug control environment?



DAP
Drug Advisory Programme

The Colombo Plan Drug Advisory Program (DAP)



Inter-American Drug Abuse Control Commission

The Inter-American Drug Abuse Control Commission (CICAD) of the Organization of American States (OAS)



AFRICAN UNION

The African Union Commission (AUC)



UNODC

The United Nations Office on Drugs and Crime (UNODC)



World Health Organization

The World Health Organization (WHO)



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0.14

MODULE - 0



INTERNATIONAL
SOCIETY OF
SUBSTANCE USE
PROFESSIONALS

How can I participate in this global community of substance use professionals?

The easiest way is to become an active member of ISSUP!

- ✓ Register for free on the ISSUP website at www.issup.net
- ✓ Click on the “Apply for Membership” icon
- ✓ Select one of four levels of membership -all are free!
- ✓ Begin networking with others on an ongoing basis

It takes only a few minutes to register and you can immediately connect with over 10,000 ISSUP members worldwide!



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0.15

MODULE - 0

What are the benefits of being an active member of this global community of substance use professionals?

You can:

- ✓ Stay informed
- ✓ Implement best practices
- ✓ Access training and mentoring
- ✓ Turn training into credentials
- ✓ Access job postings
- ✓ Access up-to-date research
- ✓ Join a professional network
- ✓ Interact with other professional networks



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0.16

MODULE - 0

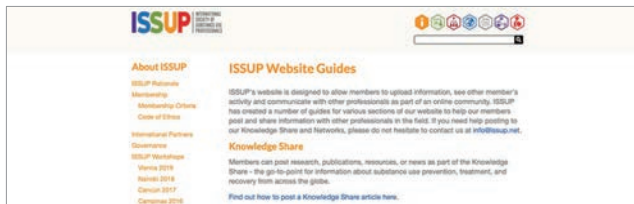
CALL TO ACTION

Next Steps

1. Join ISSUP at www.issup.net
2. Complete this training to earn credit
3. Send your credit hours to GCCC at www.globalccc.org

Participate in ISSUP

- Post on ISSUP: Find easy instructions for how to post on the ISSUP website
- Engage ISSUP's Networks: Connect with colleagues and broaden your impact



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0.17

MODULE - 0

MODULE 1

TRAINING INTRODUCTION

Content and timeline.....	21
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Summary.....	45

Content and Timeline		
Activity	Time	Person Responsible
Ceremonial welcome	20 minutes	
Trainer welcome, housekeeping, and ground rules	10 minutes	
Partner exercise: Introductions	60 minutes	
Presentation: Training materials	15 minutes	
<i>Break</i>	<i>15 minutes</i>	
Presentation: Why this training?	15 minutes	
Large-group exercise: Training expectations	15 minutes	
Partner exercise: Terminology	60 minutes	
<i>Lunch</i>	<i>60 minutes</i>	

Module 1 Goals and Objectives

Training goals

- To create a positive learning community and environment;
- To give participants background information about why the training is being done;
- To give participants a summary of the overall training goals, objectives, and learning approach of the Course; and
- To introduce some basic terminology related to the physiology and pharmacology of drug use and addiction.

Learning objectives

Participants who complete Module 1 will be able to:

- Explain the overall training goals and at least four objectives of the 3-day training;
- State at least one personal learning goal; and
- List and define at least five terms related to the physiology and pharmacology of drug use and addiction.



UNIVERSAL
CURRICULUM
Treatment of Substance Use Disorders

The Universal Treatment Curriculum for Substance Use Disorders (UTC)

UTC 1

Introduction to the
Science of Addiction



MODULE 1—TRAINING INTRODUCTION



DAP
Drug Advisory Programme

Module 1 Learning Objectives

- Explain the overall training goals and at least four objectives of this 3-day training
- State at least one personal learning goal
- List and define at least five terms related to the physiology and pharmacology of drug use and addiction. Describe at least 5 terms related to Addiction Science

1.2

Partner Exercise: Introductions

- What is your name?
- What is your job title? What does your job include?
- For what agency do you work? Where is it located?
- What is an important teaching or value that your elders passed on to you that you try to live by in your personal and professional life today?
- Can you tell me a recent amusing experience OR one interesting fact about yourself (this could be a special skill, interest, hobby)?

1.3

Training Materials



1.4

Break

15 minutes

1.5

The Global Problem

- 269 million people between the ages of 15 and 64 used illicit substances at least once in 2018



Source: UNODC. (2020). World drug report 2020. New York: United Nations.

1.6

The Global Problem

- 35.6 million people suffer from drug use disorders
- People who suffer from drug use disorder need treatment

Source: UNODC (2020). World Drug Report 2020. New York: United Nations

1.7

Diagnostic and Statistical Manual- 5 (DSM-5)

- Published by the American Psychiatric Association
- Provides standards criteria for the classification of mental disorders
- Substance Use Disorder (SUD) is defined as a problematic pattern of substance use leading to clinically significant impairment or distress as manifested by at least two of the 11 criteria occurring in a 12-month period.
- Level of severity is measured on a continuum from mild to severe

Source: American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author

1.8

International Classification of Diseases (ICD-11)

- Published by WHO and covers health as a whole
- Covers more types of substances than ICD-10
- Disorders due to the use of substances are characterized by the pattern of use and consequences. ICD-11 identifies them as follows:
 - ▣ Single episode of harmful use of substances
 - ▣ Harmful pattern of use of substances
 - ▣ Substance dependence
 - ▣ Intoxication
 - ▣ Withdrawal

ICD-11 : International Classification of Disease for Mortality and Morbidity Statistics. (Eleventh Revision ed.); World Health Organisation.

1.9

The Global Problem

- An estimated 11.3 million people injected drugs in 2018
- About 12.6% of those who inject drugs lives with HIV amounting to 1.4 million people
- About 48.5% of PWID, or some 5.5 million people, are living with Hepatitis C

Source: UNODC (2020). World Drug Report 2020. New York: United Nations.

1.10

The Global Problem

- Global consequences of SUDs are far-reaching and include:
 - ▣ Higher rates of hepatitis and tuberculosis
 - ▣ Lost productivity
 - ▣ Injuries and deaths from automobile and other accidents
 - ▣ Overdose deaths
 - ▣ Suicides
 - ▣ Violence

1.11

The Global Problem

- “There continues to be an enormous unmet need for drug use prevention, treatment, care and support, particularly in developing countries.”

Yuri Fedotov, Executive Director,
UNODC (2010-2019)

Source: UNODC. (2011). *World drug report 2011* (p. 9). New York: United Nations.

1.12

Training Series Goals

- Build international treatment capacity through:
 - ▣ Training
 - ▣ Professionalizing
 - ▣ Expanding the workforce

1.13

Courses in the Series

- UTC 1: *Introduction to the Science of Addiction*
(this curriculum, 3 days)

1.14

Courses in the Series

■ UTC 2: *Treatment for Substance Use Disorders—The Continuum of Care for Addiction Professionals* (5 days)

- ▣ Builds the foundation for understanding SUD treatment and the continuum of care
- ▣ Provides an overview of recovery and recovery management, stages of change, components of SUD treatment and evidence-based practices

1.15

Courses in the Series

■ UTC 3: *Common Co-Occurring Mental and Medical Disorders—An Overview for Addiction Professionals* (3 days)

- Provides an overview of co-occurring disorders (COD), its relationship to one another
- Discusses COD treatment and related issues as well as mental and medical disorders that commonly co-occur with SUD

1.16

Courses in the Series

■ UTC 4: *Basic Counseling Skills for Addiction Professionals* (5 days)

- Provides the basic understanding of the helping relationship
- Provides opportunities to enhance core counseling and motivational interviewing skills
- Introduces psychoeducation and recovery skills building as components of SUD treatment

1.17

Courses in the Series

■ UTC 5: *Intake, Screening, Assessment, Treatment Planning and Documentation for Addiction Professionals* (5 days)

- Provides an overview of effective, integrated screening, assessment and treatment planning in SUD treatment;
- Introduces the use of valid screening and assessment tools
- Highlights the importance of documentation in the process

1.18

Courses in the Series

■ UTC 6: *Case Management for Addiction Professionals* (2 days)

- Provides understanding of case management in SUD treatment
- Describes case management functions (planning, linkage, monitoring, advocacy, consultation, and collaboration)
- Provides opportunities to practice case management

1.19

Courses in the Series

■ UTC 7: *Crisis Intervention for Addiction Professionals* (2 days)

- Develops an understanding of crisis
- Provides guidelines for crisis management, managing suicide risk, and avoiding your own crisis (counselor self-care)

1.20

Courses in the Series

■ UTC 8: *Ethics for Addiction Professionals* (4 days)

- Develops an understanding of ethics in SUD treatment practice
- Provides an overview of the standards of professional conduct as defined in the Code of Ethics
- Introduces the ethical decision-making model and provides opportunities for practice

1.21

Course 1 Goals and Objectives

- Provide participants with an understanding of the physiology of addiction as a brain disease
- Provide participants with information about the pharmacology of psychoactive substances

1.22

Course 1 Learning Objectives

- Name and briefly describe four classes of psychoactive substances
- Describe the ways in which psychoactive substances may be taken
- Define substance use disorders
- Define physiological dependence
- Define addiction
- Briefly describe the ways in which substance use affects normal brain communication
- Define and describe the concept of stigma
- Describe the effects and consequences of at least six psychoactive substances

1.23

Exercise: Training Expectations

- Write two training expectations on your remaining index card

1.24

Partner Exercise: Terminology

- Look at your terms
- Find the definition for each of your terms

1.25

Lunch

60 minutes

1.26

[illegible]

Resource Page 1.1: The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) Criteria for Substance Use Disorder¹

Substance Use Disorder (SUD) is a problematic pattern of use of an intoxicating substance leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. The substance is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful effort to cut down or control use of the substance.
3. A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.
4. Craving, or a strong desire or urge to use the substance.
5. Recurrent use of the substance resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued use of the substance despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of its use.
7. Important social, occupational, or recreational activities are given up or reduced because of use of the substance.
8. Recurrent use of the substance in situations in which it is physically hazardous.
9. Use of the substance is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
10. Tolerance, as defined by either of the following:
 - a. A need for markedly increased amounts of the substance to achieve intoxication or desired effect.
 - b. A markedly diminished effect with continued use of the same amount of the substance.
11. Withdrawal, as manifested by either:
 - a. The characteristic withdrawal syndrome for the substance (excludes Phencyclidine, Other Hallucinogens, and Inhalants).
 - b. The substance (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.

Note: This criterion is not considered met for those taking opioids, sedatives, hypnotics or anxiolytics, or stimulant medications solely under appropriate medical supervision.

¹ <https://www.drugabuse.gov/publications/media-guide/science-drug-abuse-addiction-basics>

Resource Page 1.2 : ICD-11 Classification of Mental and Behaviour Disorder

Disorders due to substance use include single episodes of harmful substance use, substance use disorders (harmful substance use and substance dependence), and substance-induced disorders such as substance intoxication, substance withdrawal and substance-induced mental disorders, sexual dysfunctions and sleep-wake disorders.

Disorders due to use of substances

Disorders due to use of substance are characterised by the pattern and consequences of substance use. In addition to Substance intoxication, Substance has dependence-inducing properties, resulting in Substance dependence in some people and Substance withdrawal when use is reduced or discontinued. Substance is implicated in a wide range of harms affecting most organs and systems of the body, which may be classified as Single episode of harmful use and Harmful pattern of use. Harm to others resulting from behaviour during Substance intoxication is included in the definitions of Harmful use of substance. Several substance-induced mental disorders and substance-related forms of neurocognitive impairment are recognised.

Single episode of harmful use of substances

A single episode of use of substance that has caused damage to a person's physical or mental health or has resulted in behaviour leading to harm to the health of others. Harm to health of the individual occurs due to one or more of the following:

- (1) behaviour related to intoxication;
- (2) direct or secondary toxic effects on body organs and systems; or
- (3) a harmful route of administration.

Harm to health of others includes any form of physical harm, including trauma, or mental disorder that is directly attributable to behavior due to substance intoxication on the part of the person to whom the diagnosis of single episode of harmful use applies.

This diagnosis should not be made if the harm is attributed to a known pattern of substance use.

Exclusion

- Harmful pattern of use of substance
- Substance Dependence

Harmful pattern of use of substances

A pattern of psychoactive substance use that has caused damage to a person's physical or mental health or has resulted in behaviour leading to harm to the health of others. The

¹ ICD-11 : International Classification of Disease for Mortality and Morbidity Statistics. (Eleventh Revision ed.): World Health Organisation.

pattern of psychoactive substance use is evident over a period of at least 12 months if substance use is episodic or at least one month if use is continuous. Harm to health of the individual occurs due to one or more of the following:

- (1) behaviour related to intoxication;
- (2) direct or secondary toxic effects on body organs and systems; or
- (3) a harmful route of administration.

Harm to health of others includes any form of physical harm, including trauma, or mental disorder that is directly attributable to behaviour related to psychoactive substance intoxication on the part of the person to whom the diagnosis of Harmful pattern of use of psychoactive substance applies.

Exclusion

- Substance Dependence
- Episode of Harmful Use of Substance

Substance Dependence

Dependence on a psychoactive substance is a disorder of regulation of psychoactive substance use arising from repeated or continuous use of psychoactive substance. The characteristic feature is:

- a strong internal drive to use the psychoactive substance, which is manifested by impaired ability to control use, increasing priority given to use over other activities and persistence of use despite harm or negative consequences. These experiences are often accompanied by a subjective sensation of urge or craving to use the psychoactive substance.
- physiological features of dependence may also be present, including tolerance to the effects of the psychoactive substance, withdrawal symptoms following cessation or reduction in use of the psychoactive substance, or repeated use of psychoactive substance or pharmacologically similar substances to prevent or alleviate withdrawal symptoms.

The features of dependence are usually evident over a period of at least 12 months but the diagnosis may be made if psychoactive substance use is continuous (daily or almost daily) for at least 1 month.

Exclusion

- Episode of Harmful Use of Substance
- Harmful pattern of use of substance

Intoxication

Intoxication is a clinically significant transient condition that develops during or shortly after the consumption of a psychoactive substance that is characterized by disturbances in consciousness, cognition, perception, affect, behaviour, or coordination. These disturbances are caused by the known pharmacological effects of psychoactive substance and their intensity is closely related to the amount consumed. Presenting features may include impaired attention, inappropriate or aggressive behaviour, lability of mood, impaired judgment, poor coordination, unsteady gait, and slurred speech. At more severe levels of intoxication, stupor or coma may occur.

Withdrawal

Withdrawal is a clinically significant cluster of symptoms, behaviours and/or physiological features, varying in degree of severity and duration, that occurs upon cessation or reduction of use of alcohol in individuals who have developed dependence or have used psychoactive substances for a prolonged period or in large amounts. Presenting features of withdrawal may include autonomic hyperactivity, increased hand tremor, nausea, retching or vomiting, insomnia, anxiety, psychomotor agitation, transient visual, tactile or auditory hallucinations, and distractibility. Less commonly, the withdrawal state is complicated by seizures. The withdrawal state may progress to a very severe form of delirium characterized by confusion and disorientation, delusions, and prolonged visual, tactile or auditory hallucinations.

Note: The detailed diagnostic criteria can be accessed at the WHO website.

Note: At the time of the updating of this Course, the ICD-11 was in the final stages of revision and not yet formally released. However, INL and the Treatment Expert Advisory Group, in the interest of providing UC trainees with the latest and most current guidance on substance use disorders, requested inclusion of the ICD-11 language, 'as is.'

Resource Page 1.3: The Universal Treatment Curriculum for Substance Use Disorders (UTC) Basic Level Training Series

- UTC 1: *Introduction to the Science of Addiction (this course)*
- UTC 2: *Treatment for Substance Use Disorders—The Continuum of Care for Addiction Professionals*
- UTC 3: *Common Co-Occurring Mental and Medical Disorders—An Overview for Addiction Professionals*
- UTC 4: *Basic Counseling Skills for Addiction Professionals*
- UTC 5: *Intake, Screening, Assessment, Treatment Planning and Documentation for Addiction Professionals*
- UTC 6: *Case Management for Addiction Professionals*
- UTC 7: *Crisis Intervention for Addiction Professionals*
- UTC 8: *Ethics for Addiction Professionals*

Module 1—Training Introduction, Summary

The global problem

- Psychoactive substance use continues to be a global problem. A survey done by the United Nations Office on Drugs and Crime (or UNODC) found that, in 2018, 269 million people between ages 15 and 64 used illicit substances at least once in 2018¹.
- Illicit substances in the survey included opioids, cannabis, cocaine, other amphetamine-type stimulants, hallucinogens, and ecstasy, among others.
- A significant number of people who use psychoactive substances develop SUDs. .
- Substance use disorder is a general term used to describe a range of problems associated with substance use (including illicit drugs and misuse of prescribed medications).
- There are two classification systems used in the diagnosis of drug use disorders or SUDs, the Diagnostic Statistical Manual (DSM) and the International Classification of Diseases (ICD).
- Diagnostic Statistical Manual (DSM), published by the American Psychiatric Association, offers a common language and standards criteria for the classification of mental disorders.
- In 2013, the APA updated the DSM, replacing the categories of substance abuse and substance dependence with a single category: substance use disorder (SUD).
- SUD is defined as a problematic pattern of substance use leading to clinically significant impairment or distress as manifested by at least two of the 11 criteria occurring in a 12-month period. The level of severity is measured on a continuum from mild to severe.
- The symptoms associated with SUD fall into four major groupings: impaired control; social impairment; risky use; and, pharmacological criteria (i.e. tolerance and withdrawal).
- Another classification system is the International Classification of Diseases (ICD), published by the World Health Organization.
- It is distinguished from the DSM in that it covers health as a whole. Under ICD-11, patterns of psychoactive substance use are labelled:
 - Single episode of harmful use of a psychoactive substance - refers to a single episode of use of psychoactive substance that has caused damage to a person's physical or mental health or has resulted in behaviour leading to harm to the health of others.
 - Harmful use - if the pattern is causing damage to health. The damage may be physical (as in the case of hepatitis from self-administration of injected drugs) or mental (i.g. episodes of depressive disorder secondary to heavy consumption of alcohol), and

¹ United Nations Office on Drugs and Crime, World Drug Report 2020

- Dependence - if the use of a substance or a class of substances takes on a much more higher priority for a given individual than other behaviors that once had greater value. There is compulsion to use drugs and physical signs of a withdrawal state upon abstinence.
 - Intoxication – a clinically significant transient condition that develops during or shortly after the consumption characterised by disturbances in consciousness, cognition, perception , affect behaviour or coordination.
 - Withdrawal – is a clinically significant cluster of symptoms, behaviors and/or physiological features, varying in degree of severity and duration, that occurs upon cessation or reduction of use of alcohol in individuals who have developed dependence or have used psychoactive substances for a prolonged period or in large amounts. Presenting features of withdrawal may include autonomic hyperactivity, increased hand tremor, nausea, retching or vomiting, insomnia, anxiety, psychomotor agitation, transient visual, tactile or auditory hallucinations, and distractibility.
- The UNODC report estimates a total of 35.6 million people between ages 15 and 64 suffer from drug use disorders. People who suffer from drug use disorders or people with drug use disorders are those subset of people who use drugs and are in need of treatment, health and social care, and rehabilitation.
 - The U.N Survey also found that:
 - 11.3 million people injected drugs in 2018
 - About 12.6 percent (1.4 million) of those who inject drugs are HIV positive.
 - About 48.5 percent (5.5 million) of those who inject drugs are infected with Hepatitis C.
 - Global consequences of SUDs are far-reaching and include, for example:
 - Higher rates of HIV/AIDS, hepatitis and tuberculosis;
 - Lost productivity;
 - Injuries and death due to automobile and other accidents;
 - Overdose hospitalizations and deaths;
 - Suicides; and
 - Violence.
 - The numbers are significant. The Executive Director of UNODC, Yuri Fedotov (2010-2019), notes that “there continues to be an enormous unmet need for drug use prevention, treatment, care and support, particularly in developing countries.” There are a number of reasons for this, but one reason is a lack of adequate treatment capacity.

1 United Nations Office on Drugs and Crime, World Drug Report 2020

The training series

- This course is part of a training series developed through funding from the U.S. Department of State to The Colombo Plan.
- The overall goal of the training series is to reduce the health, social, and economic problems associated with SUDs by building international treatment capacity through training, professionalizing, and expanding the global treatment workforce.
- The series prepares counselors for professional certification at the entry level by providing them with necessary information and with specific skills training. See You will find a list of the courses included in the training series on Resource Page 1.3 in your manuals.

Other Courses in the series

- UTC 1: Introduction to the Science of Addiction is a 3-day course that presents a comprehensive overview of addiction, provides an understanding of the physiology of addiction as a brain disease, and describes the pharmacology of psychoactive substances.
- UTC 2: Treatment for Substance Use Disorders—The Continuum of Care for Addiction Professionals is a 5-day foundational course. By this we mean that it provides a necessary foundation for learning about SUD treatment. It is not a how- to or skills based course, but it provides a context for the skills-based courses later in the series. UTC 2 provides an overview of recovery, recovery management, stages of change, principles of effective treatment, components of treatment, factors affecting treatment outcomes, and evidence-based practices, including couples and family counseling.
- UTC 3: Common Co-Occurring Mental and Medical Disorders—An Overview for Addiction Professionals is a 3-day course. It is also a foundational course and provides an overview of the relationship of co-occurring disorders to one another and to SUD related treatment issues. It outlines brief descriptions of the most commonly cooccurring mental and medical disorders with SUD.
- UTC 4: Basic Counseling Skills for Addiction Professionals is a 5-day skills-based course. It provides an overview of the helping relationship. It also provides opportunities to learn and practice core counseling and basic motivational interviewing skills which are essential at every stage of treatment and in every type of counseling situation, including working with families. Basic group (for clients and family members) counseling and psychoeducational group skills also are covered in the course.
- UTC 5: Intake, Screening, Assessment, Treatment Planning and Documentation for Addiction Professionals is a 5-day skills-based course that teaches effective, integrated assessment and treatment/service planning. It also addresses the importance of documentation in the treatment process.

- UTC 6: Case Management for Addiction Professionals is a 2-day foundational and skills-based course that provides an overview of case management in SUD treatment and provides skills practice in case management functions such as planning, linkage, monitoring, advocacy, consultation, and collaboration.
- UTC 7: Crisis Intervention for Addiction Professionals, a 2-day course, addresses the concept of crisis as a part of life and provides guidelines for and practice in crisis management, including managing suicide risk. It also addresses ways counselors can avoid personal crisis situations by providing information and exercises about counselor self-care.
- UTC 8: Ethics for Addiction Professionals is a 4-day course that aims to develop an understanding of ethics in SUD treatment and provides an overview of professional conduct as defined in the Code of Ethics. It provides the opportunity to learn and practice the process of ethical decision making. The course also addresses the importance of supervision as part of ethical practice.

MODULE 2

INTRODUCTION TO PSYCHOACTIVE SUBSTANCE USE

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Content and Timeline	
Activity	Time
Introduction to Module 2	10 minutes
Presentation: What are psychoactive substances and how do they work?	60 minutes
Presentation: Classification of psychoactive substances	10 minutes
Presentation: Methods (routes) of administration	10 minutes
Small-group exercise: Routes of administration	20 minutes
<i>Break</i>	<i>15 minutes</i>
Small-group case studies: Progression of substance use	45 minutes
Learning assessment	30 minutes
Day 1 wrap-up	20 minutes

Module 2 Goals and Objectives

Training goals

- To provide an overview of psychoactive substances as discussed in this course;
- To introduce the main categories (classes) of psychoactive substances;
- To summarize eight methods by which psychoactive substances are administered and what happens to them after they are administered; and
- To describe levels of progression of psychoactive substance use.

Learning objectives

Participants who complete Module 2 will be able to:

- Define psychoactive substance;
- List general ways in which psychoactive substances affect mood, thoughts, and behavior;
- List the four main categories (classes) of psychoactive substances and several substances within each;
- List the routes of administering psychoactive substances; and
- Discuss the levels of progression of substance use.



UNIVERSAL
CURRICULUM
Treatment of Substance Use Disorders

The Universal Treatment Curriculum for Substance Use Disorders (UTC)

UTC 1

Introduction to the
Science of Addiction



MODULE 2—INTRODUCTION TO PSYCHOACTIVE SUBSTANCE USE



DAP
Drug Advisory Programme

Module 2 Learning Objectives

- Define psychoactive substance
- List general ways in which psychoactive substances affect mood, thoughts, and behavior
- List the four main categories (classes) of psychoactive substances and several substances within each
- List the methods of administering psychoactive substances
- Discuss the levels of progression of substance use

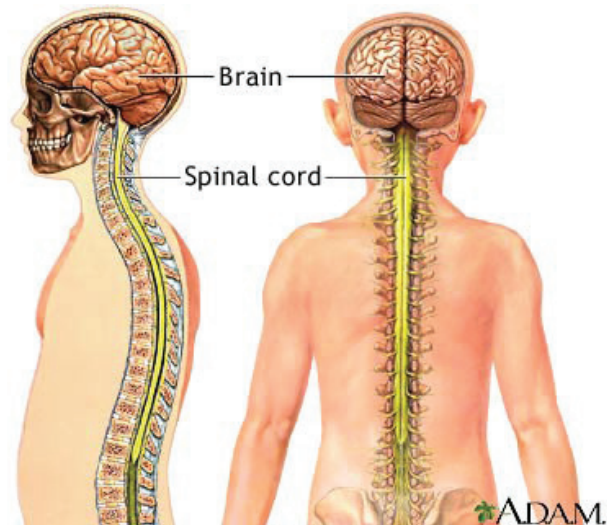
2.2

Psychoactive Substances

- Affect the functioning of the central nervous system.
- Change how people behave, perceive or feel about what is happening around them.

2.3

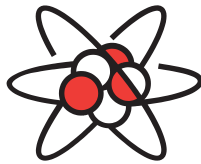
Central Nervous System



2.4

Blood-Brain Barrier

Large, water-soluble molecules are blocked



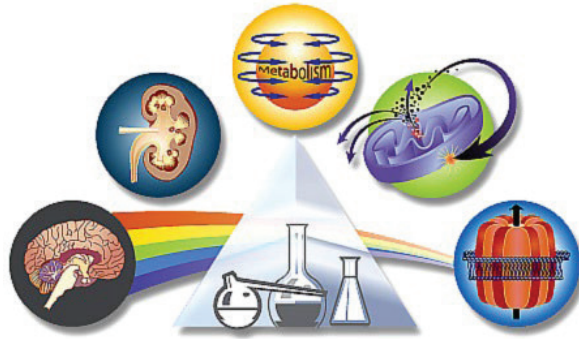
Small, fat-soluble molecules can enter



2.5

Pharmacology

- Examines the effects of medications and other substances on the body and the brain



2.6

Half-Life

- The amount of time it takes to eliminate half of the original dose of a substance from the body

2.7

Other Factors

- A person's age, the length of time a person has regularly used a substance, and the amount of a substance regularly used affect how the body:
 - ▣ Absorbs psychoactive substances
 - ▣ Distributes them
 - ▣ Metabolizes them
 - ▣ Eliminates them

2.8

Psychoactive Substances

■ Psychoactive substances alter:

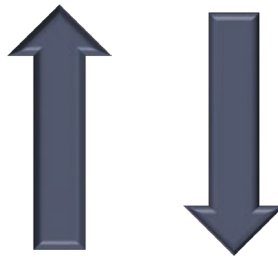
- ▣ Mood
- ▣ Thoughts
- ▣ Sensory perceptions
- ▣ Behavior



2.9

Effects of Psychoactive Substances

- Can be positive *or* negative
- Depend to a large extent on the *type* of substance used



2.10

Classification of Psychoactive Substances

- Stimulants— *increase* the activity of the CNS
- Depressants— *decrease* the activity of the CNS
- Opioids— *decrease* the activity of the CNS
- Hallucinogens— produce a spectrum of vivid sensory *distortions* and markedly alter mood and thinking

2.11

Classification of Psychoactive Substances (Continued)

- Some psychoactive drugs do not neatly fit into the basic classes:
 - ▣ Cannabis (marijuana and hashish)
 - ▣ Miraa (Khat)
 - ▣ Inhalants (solvents, gases, nitrites)
 - ▣ Dissociative anesthetics (PCP, ketamine)

2.12

Synthetic Opioids

- Synthetic opioids such as fentanyl are highly potent manufactured drugs that now account for the majority of overdoses in some countries
 - ▣ The potency of synthetic opioids can be up to 100 times that of morphine or heroin
 - ▣ Only a small amount of synthetic opioids is required to produce a “high”
 - ▣ They are often added to other drugs (e.g., heroin, cocaine) and serve as an inexpensive and highly potent adulterant that can have lethal effects
 - ▣ Synthetic opioids are also illegally converted to pills that resemble prescription painkillers

2.13

Legal Substances

- Just because a substance is legal does not mean it is safer than an illegal substance



2.14

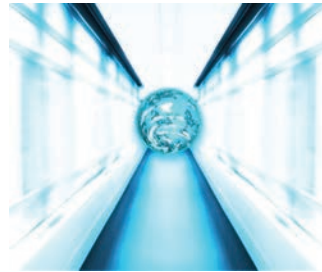
Routes of Administration

- Swallowing
- Snorting
- Smoking
- Inhaling fumes
- Intramuscular (IM) injection
- Subcutaneous (SC) injection
- Intravenous (IV) injection
- Topical
- Sublingual

UNODC (2016). Terminology and Information on Drugs. Retrieved on March 22, 2017 at https://www.unodc.org/documents/scientific/Terminology_and_Information_on_Drugs-3rd_edition.pdf 2.15

Routes of Administration

- The faster the drug hits the brain, the greater and more reinforcing its effect



2.16

Speed of Action

- Smoking: 7–10 seconds
- Intravenous injecting: 15–30 seconds
- Injecting into the muscle or under the skin: 3–5 minutes

Source: <http://www.pharmacologie.u-bordeaux2.fr/en/pharmacodependance/administration.htm>

2.17

Speed of Action

- Mucous membrane absorption (snorting, rectal): 3–5 minutes
- Swallowing: 20–30 minutes
- Absorbed through skin: Slowly over a long period

Source: <http://www.pharmacologie.u-bordeaux2.fr/en/pharmacodependance/administration.htm>

2.18

Small-Group Exercise: Routes of Administration

- Form small groups
- As a group, develop a list of any five psychoactive substances
- For each substance, list the most common routes of administration used in your area
- Keep in mind that some substances have more than one route of administration

2.19

Break

15 minutes

2.20

Progression of Use

- Experimental/recreational use
- Circumstantial/Occasional use
- Intensified/regular use
- Compulsive/addictive use



Source: Landry, M.J. Understanding Drug of Abuse: The Process of Addiction, Treatment and Recovery. 2.21
1994 American Psychiatric Publishing Inc, USA

Learning Assessment

- Write one quiz question about today's material on a piece of paper

2.22

Reflective Exercise

- What did you learn today that you did not already know?
- How might you apply what you learned to your job?
- What questions do you still have?

2.23

[illegible]

Resource Page 2.1: Progression of Use

Experimental/Recreational Use

Recreational use is the least severe level. It usually occurs in a social setting among friends, does not happen very often, and typically involves consuming small to moderate amounts of psychoactive substances. It is often driven by curiosity or peer pressure. A person using recreationally rarely experiences problems related to use. A possible exception is if the substance used is illegal.

Circumstantial/Occasional Use

Circumstantial use happens often when an individual is motivated to achieve a desirable effect as a way of coping with something circumstantial. For example, a very shy person may find that smoking marijuana makes him or her more relaxed and able to talk to people, dance, or otherwise be more social. Or a person with depression may try a substance to feel livelier and better. An extreme example is that soldiers in combat have been known to use marijuana, heroin, or other available substances to help them relax and escape the stresses of war. A person at this level also may use occasionally for fun or to be social. A person may or may not experience problems because of use at this level.

Intensified/Regular Use

Some people start out with recreational or circumstantial use but begin to use more of the substance, more often. When psychoactive substances are used daily or almost daily, in low to moderate doses, the effect is intensified. At this level, a person is often motivated by a need to get regular relief from an ongoing problem, such as anxiety or depression, or to maintain a desired level of performance. At this level, a person is probably beginning to experience problems with use (e.g., being late to work on Monday mornings because of hangovers; other's being concerned about the use). This level of substance use is considered abuse.

Compulsive/Addictive Use

Compulsive use is the most dangerous and severe. At this level, high doses are needed daily or almost daily to reach a desired physical and/or psychological effect or to avoid withdrawal symptoms. At this level, the substance becomes the most important thing in a person's life, around which all other activities are organized. At this level, a person experiences problems related to use but continues using in spite of them. This level of substance use is considered addiction.

Source: Landry, M.J. Understanding Drug of Abuse: The Process of Addiction, Treatment and Recovery. 1994 American Psychiatric Publishing Inc, USA

Module 2—Introduction to Psychoactive Substance Use, Summary

What are psychoactive substances and how do they work?

- A psychoactive substance is a substance that affects the body's central nervous system (or CNS) and changes how people behave or perceive what is happening around them:
 - Affect the functioning of the central nervous system.
 - Changes how people behave, perceive or feel about what is happening around them.
- The Central Nervous System (CNS) is that part of the nervous system that consists of the brain and spinal cord. The CNS are protected by a membrane called the blood–brain barrier. This barrier is a series of tightly pressed-together cells that allows for the passage of only certain chemicals.
- Because the cells of the blood–brain barrier are so tightly pressed together, substances with a large molecular structure and that are water soluble (meaning that they dissolve easily in fluid) can't get through the barrier. Most medications we take, like aspirin or antibiotics, are in this category.
- However, substances with a small molecular structure and that are fat soluble, as most psychoactive substances are, can easily pass through the blood–brain barrier. In this way, psychoactive substances can have a direct effect on brain functioning.
- Although psychotropic medications used to treat major mental disorders (like antipsychotics and antidepressants) are psychoactive substances, they are not abused substances because they do not produce the same immediate pleasurable effects.

Metabolism

- In addition to their direct effects in the brain, psychoactive substances can alter the biochemical processes of body tissues and organs.
- Pharmacology is the branch of science that examines the effects of psychoactive substances on the body and the brain, including how they are metabolized:
 - Metabolism is a complex chemical process that is constantly happening in our bodies. For example, we get the energy we need from food through metabolism.
 - These chemical reactions in our bodies' cells convert fuel from food into the energy we need to do everything from moving to thinking to growing; they then eliminate what is left of the food.
 - All substances we ingest are metabolized in some way.
 - As soon as a person takes a substance, the body immediately begins to break it down and eliminate it.

- The liver is responsible for metabolizing most foreign substances, with the kidneys providing support for the process.
- Once a substance has been metabolized, it is eliminated from the body, primarily through urine or feces but also through sweat, saliva, or breath.
- Different substances take different lengths of time to break down and be eliminated. The amount of time it takes to eliminate half of the original dose of a substance from the body is called the substance's half-life:
 - The half-life of a substance affects how long its effects last and how long it takes to fully clear the body.
 - When a person stops using a substance, it can be important to know the half-life of the substance to know how long it will take the person to fully clear the substance from the body.
- Factors other than the half-life of a substance also affect how long it takes to metabolize a substance. The age of the person, the time the person has regularly used a substance and the amount of substance regularly used affect the way the body:
 - Absorbs psychoactive substances,
 - Distributes them in the body, metabolizes them and
 - Eliminates them
- For example:
 - Young children and older adults metabolize and eliminate substances more slowly.
 - If a person uses a substance often and heavily, it may be metabolized and eliminated more quickly.

General effects of psychoactive substances

- The primary characteristic of psychoactive substances is that they alter mood, thoughts, judgments, sensory perceptions, and behavior.
- Examples of how a substance might alter mood include: Feeling more alert;
 - Feeling more relaxed;
 - Feeling more or less depressed than usual;
 - Feeling irritable or angry;
 - Feeling more sociable;
 - Feeling "happy";
 - Feeling more or less sexual; and
 - Feeling fearful.

- Examples of how a substance might alter thinking and judgment include:
 - Racing thoughts;
 - Inability to plan or make a decision;
 - Distorted perceptions;
 - Increased clarity of thought;
 - Paranoid thoughts; and
 - Impaired judgement or criterion of reality
- Examples of how a substance might alter sensory perceptions
 - Perceptual distortions
 - Changes in temperature perception
 - Changes in pain perception
- Examples of how a substance might alter behavior include: Decreased or increased activity;
 - Increased risk-taking, dangerous activities;
 - Behavior not in line with personal values;
 - Aggression or violence;
 - Passivity; and
 - Increased or decreased sexual behavior.
- In summary, psychoactive substances produce a variety of effects, both positive and negative. These effects depend in large part on the type of substance taken.

Classification of psychoactive Substances

- The way a drug affects a person depends in part on the type of drug and how it affects the central nervous system (CNS):
 - Stimulants increase the activity of the CNS. They tend to increase heart rate and breathing and offer a sense of excited euphoria. Stimulants increase alertness, attention, and energy, as well as elevate blood pressure, heart rate and respiration. Under this classification, in our discussions we will address the following substances: Cocaine, Amphetamine, Nicotine and Caffeine;
 - Depressants decrease the activity of the CNS. They tend to decrease heart rate and breathing and offer a relaxed, sometimes sleepy, sense of well-being or euphoria. This category includes Alcohol, Barbiturates, Benzodiazepines, and Gamma-Hydroxybutyrate (GHB);

- Opioids selectively depress the CNS. These analgesics reduce pain and tend to induce sleep and relieve pain. Opioids include illegal drugs (e.g., heroin), synthetic opioids (e.g., fentanyl), and pain relievers that are available by prescription. Opioid pain relievers are generally safe when taken for a short time and as prescribed by a doctor, but because they produce euphoria in addition to pain relief, they can be misused (taken in a different way or in a larger quantity than prescribed or taken without a doctor's prescription). Synthetic opioids have emerged as the primary cause of drug overdose in some countries, due to the high potency and addictive potential in comparison to other types of opioids, and because they are often mixed with other drugs or converted to pills that resemble prescription opioids. Examples of opioids: Heroin, Morphine, Opium, Methadone, Fentanyl;
 - Hallucinogens produce a spectrum of vivid sensory distortions and markedly alter mood and thinking. They are a diverse group of drugs that alter perception (awareness of surrounding objects and conditions), thoughts and feelings. They cause hallucinations, or sensations and images that seem real though they are not. These include D-lysergic acid diethylamide (LSD), Peyote (mescaline), and Psilocybin Mushrooms.¹
- The classification system is intended as a general guide and that not all drugs fit neatly into the four classes. For example:
- Cannabis (marijuana, hashish) – when used, people experience a sense of mild euphoria and relaxation, often referred to as a “high.” Cannabis causes changes in the user's mood and also affects how they think and perceive the environment. Various tests have shown that the delta-9- tetrahydro-cannabinol (THC), the primary psychoactive ingredient in marijuana, has mild-to-moderate painkilling effects, and can be used for the treatment of pain. Marijuana and Dronabinol (synthetic) are in this group;
 - Miraa (khat);
 - Inhalants (solvents, gases, nitrites) – these are volatile substances that produce chemical vapors that can be inhaled to induce a psychoactive, or mind-altering, effect. Although other abused substances can be inhaled, the term “inhalants” is used to describe a variety of substances whose main common characteristic is that they are rarely, if ever, taken by any route other than inhalation. Examples of inhalants are: toluene; paints; paint thinner; gasoline; and hair spray.
 - Dissociative anesthetics (PCP, ketamine).
- Synthetic opioids such as fentanyl are highly potent manufactured drugs that now account for the majority of overdoses in some countries
- The potency of synthetic opioids can be up to 100 times that of morphine or heroin
 - Only a small amount of synthetic opioids is required to produce a “high”

1. NIDA (2016). Misuse of prescription drugs.

- They are often added to other drugs (e.g., heroin, cocaine) and serve as an inexpensive and highly potent adulterant that can have lethal effects
 - Synthetic opioids are also illegally converted to pills that resemble prescription painkillers
- It's important to keep in mind that just because a substance is legal does not mean it is safer than an illegal substance. The legality of a substance is generally more the result of traditions, culture, or political or religious factors than whether a substance is more or less harmful than another.
- A very common substance, marijuana, was not included in the classification chart. This is because the classification system is intended as a general guide, and some psychoactive substances do not fit neatly into the basic categories.
- Marijuana may be somewhat sedating or relaxing at low doses but may have some hallucinogenic effects at high doses.
 - Miraa (khat) can induce mild euphoria and excitement at low doses but at higher doses it can also induce manic behaviors and hyperactivity.
 - Dissociative anesthetics (or PCP) can have hallucinogenic effects but can also have depressant or stimulant effects.
 - Inhalants generally have depressant effects but can also have stimulant or hallucinogenic effects.

Methods (routes) of administration

- How a substance is taken is called the method or route of administration.
- Psychoactive substances can enter the body through nine routes of administration:
- Swallowing;
 - Snorting (inhaling through the nose); Smoking;
 - Inhaling fumes;
 - Intramuscular (IM) injection (injecting into a muscle);
 - Subcutaneous (SC) injection (injecting the substance just beneath the skin); Intravenous injection (injecting the substance into a vein);
 - Topically (applying the substance to the top layer of the skin); and
 - Sublingually (dissolving the substance under the tongue and absorbing it through the mouth tissue).¹

1. UNODC (2016). Terminology and Information on Drugs. Retrieved on March 22, 2017 at https://www.unodc.org/documents/scientific/Terminology_and_Information_on_Drugs-3rd_edition.pdf

- The route of administration matters because it affects how quickly a substance gets to the brain; the faster the substance hits the brain, the greater and more reinforcing its effect.
- From fastest to slowest, the speed of action for the various routes of administration are: Smoking: 7–10 seconds;
 - Intravenous injecting: 15–30 seconds;
 - Injecting into the muscle or under the skin: 3–5 minutes;
 - Mucous membrane absorption (snorting, rectal): 3–5 minutes;
 - Swallowing: 20–30 minutes; and
 - Absorbed through skin: Slowly over a long period.
 - Mucous membrane absorption (snorting, rectal): 3–5 minutes; Swallowing: 20–30 minutes; and
 - Absorbed through skin: Slowly over a long period.¹

Progression of use

- The pattern of progression from use to abuse to dependence typically begins with the first rewarding experience with a psychoactive substance; a rewarding experience usually results in a person's seeking another rewarding experience. If the experience is unpleasant, the individual will most likely not repeat the experience.
- When substance use does progress, the progression typically follows a pattern. The pattern can be described in a number of ways, but one way to look at it is:
 - Experimental/recreational use;
 - Circumstantial/occasional use;
 - Intensified/regular use; and
 - Compulsive/addictive use.
- Resource Page 2.1: Progression provides descriptions of each level of use

1. <http://www.pharmacologie.u-bordeaux2.fr/en/pharmacodependance/administration.htm>

MODULE 3

SCIENCE OF ADDICTION

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Content and Timeline	
Activity	Time
Welcome and review of day 1	15 minutes
Introduction to Module 3	10 minutes
Small-group exercise: What is addiction?	30 minutes
Presentation: The science of addiction, Part 1	20 minutes
Exercise: Brain communication	45 minutes
<i>Break</i>	<i>15 minutes</i>
Presentation: The science of addiction, Part 2	15 minutes
Exercise: Psychoactive substances and brain communication	60 minutes
Presentation: Addiction and the reward circuit	30 minutes
<i>Lunch</i>	<i>60 minutes</i>
Presentation: Vulnerability to addiction	20 minutes
Small-group exercise: Case study review	60 minutes
<i>Break</i>	<i>15 minutes</i>

Module 3 Goal and Objectives

Training goal

To provide an overview of the science of addiction as a brain disease.

Learning objectives

Participants who complete Module 3 will be able to:

- Define addiction;
- Discuss why addiction is considered a brain disease; and
- Provide a basic description of how psychoactive substances create their effects in the brain.



UNIVERSAL
CURRICULUM
Treatment of Substance Use Disorders

The Universal Treatment Curriculum for Substance Use Disorders (UTC)

UTC 1

Introduction to the
Science of Addiction



MODULE 3—SCIENCE OF ADDICTION



Reflective Exercise

- What did you learn that you did not already know?
- How might you apply what you learned to your job?
- What questions do you still have?

3.2

Module 3 Learning Objectives

- Define addiction
- Discuss why addiction is considered a brain disease
- Provide a basic description of how psychoactive substances create their effects in the brain

3.3

Small-Group Exercise: What is Addiction?

- Choose one person to write on newsprint for your group
- Share your thoughts about addiction and those who are addicted
- Work quickly and include everything that comes to mind; don't edit yourselves

3.4

Addiction

- Is NOT a character flaw, a personality disorder, or a moral failing
- IS a health problem

3.5

Science of Addiction

- Addiction is a chronic, relapsing brain disease that is characterized by compulsive substance seeking and use, despite harmful consequences

NIDA. 2020, July 13. Drug Misuse and Addiction

3.6

Disease

- Alteration of the normal structure or function of any body part, organ, or system
- A characteristic set of symptoms or signs

3.7

Symptom

- Subjective: Directly experienced by the person; cannot be seen or measured by another person
- Examples: Stomachache, fatigue, dizziness
- Addiction examples: Craving, anxiety when not using

3.8

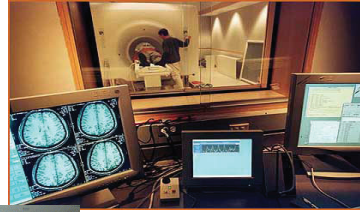
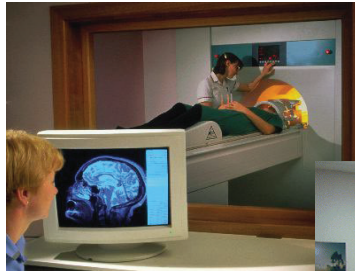
Sign

- Objective: physical indication of disease that can be seen or measured by another person
- Examples: skin rash, fever, high blood pressure
- Addiction examples: abscess at an injection site; difference in brain activity as measured by imaging techniques

3.9

Imaging the Brain

MRI



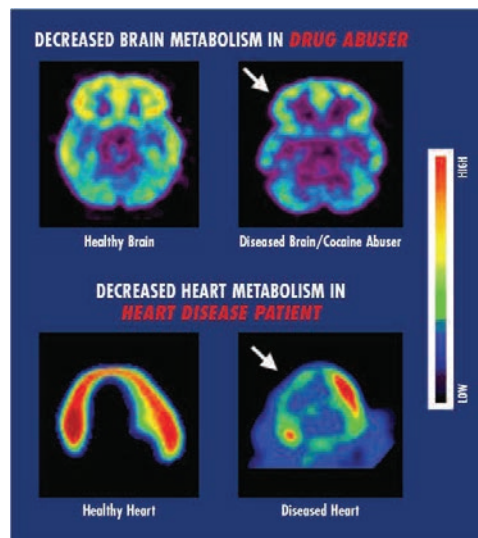
PET



SPECT

3.10

Disease



ADDICTION
AND HEART
DISEASE BOTH
CAUSE
BIOLOGICAL
CHANGES

3.11

Etiological Agent

■ An external *cause*

■ Examples:

- ▣ For AIDS, the etiological agent is HIV
- ▣ For a severe sore throat, the etiological agent is probably a bacterium
- ▣ For addiction, the agent is the substance

3.12

Other Factors

- Other factors play a role in disease development
- Just as not everyone exposed to a cold virus will actually get a cold, not everyone who is exposed to a substance will become addicted to it
- While the presence of the substance is *necessary* for addiction to develop, it is not enough in and of itself

3.13

Other Factors

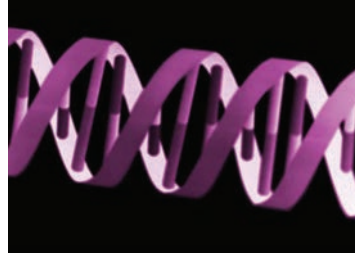
- With heart disease, for example, the environment and lifestyle issues play important roles
- A person's genetic makeup also plays an important role



3.14

Genetics

- The same is true of addiction
- Example: As much as half of an individual's risk of becoming addicted to nicotine, alcohol, or other drugs depends on his or her genes



Source: National Institute on Drug Abuse. (2008). Genetics of Addiction: A Research Update From the National Institute on Drug Abuse. Accessed April 17, 2011 at <http://www.drugabuse.gov/tib/genetics.html>

3.15

Pathogenesis

- The progression of a disease from its origins through its critical development and expected outcomes
- Most diseases, when untreated, follow a generally predictable path of symptom development and biological changes
- This is also true of addiction



3.16

Chronic Disease

- Long lasting
- Cannot be cured but can be managed

3.17

Chronic Disease

- The brain shows distinct changes after substance use that can persist long after the substance use has stopped

And

- Like diabetes and hypertension, addiction:
 - ▣ Cannot be cured
 - ▣ Can be managed

3.18

Brain Disease

- Substances actually change the structure of the brain and how it works



3.19

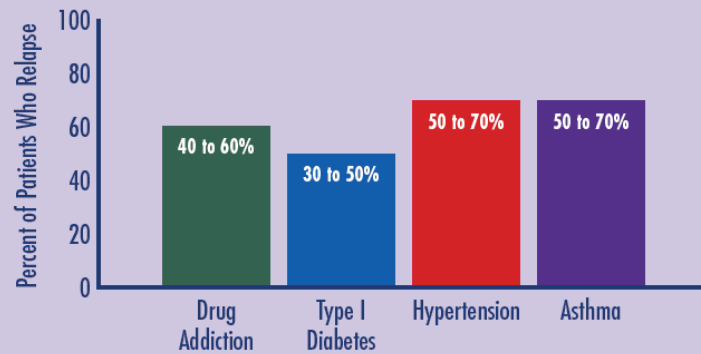
Relapsing Disease

- Because of addiction's chronic nature, relapsing to substance use is not only possible but common

3.20

Relapse

COMPARISON OF RELAPSE RATES BETWEEN DRUG ADDICTION AND OTHER CHRONIC ILLNESSES



McLellan, A. T., Lewis, D. C., O'Brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. *JAMA*, 284(13), 1689–1695.

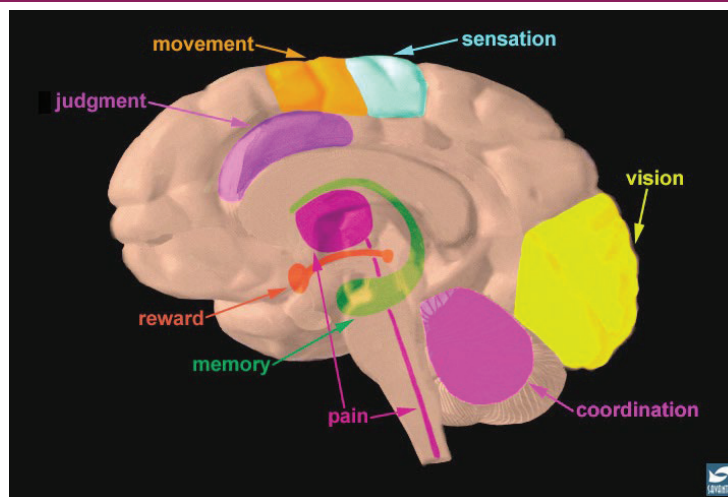
3.21

Lapse and Relapse

- A lapse is a brief, often one-time, return to substance use
- A relapse is a complete return to using substances in the same way the person did before he or she quit
- A lapse can lead to relapse, but it doesn't always
- Relapse can be avoided

3.22

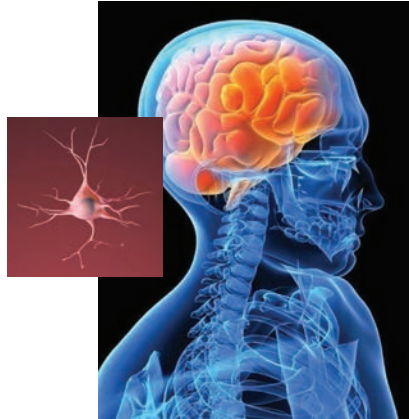
Introduction to the Brain



3.23

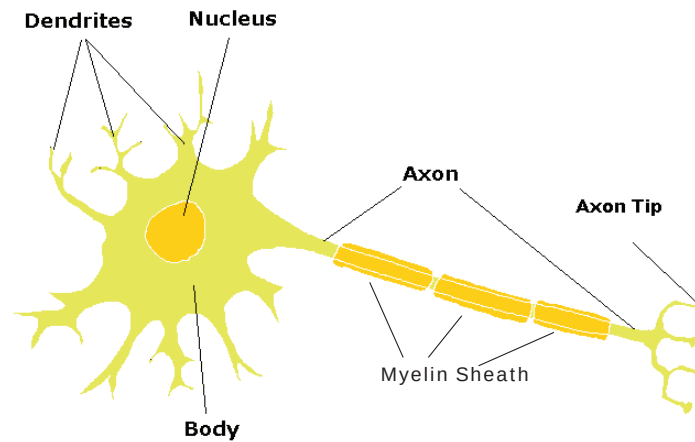
Brain Communication

- The brain is a communications center consisting of billions of neurons or nerve cells



3.24

Neuron Structure



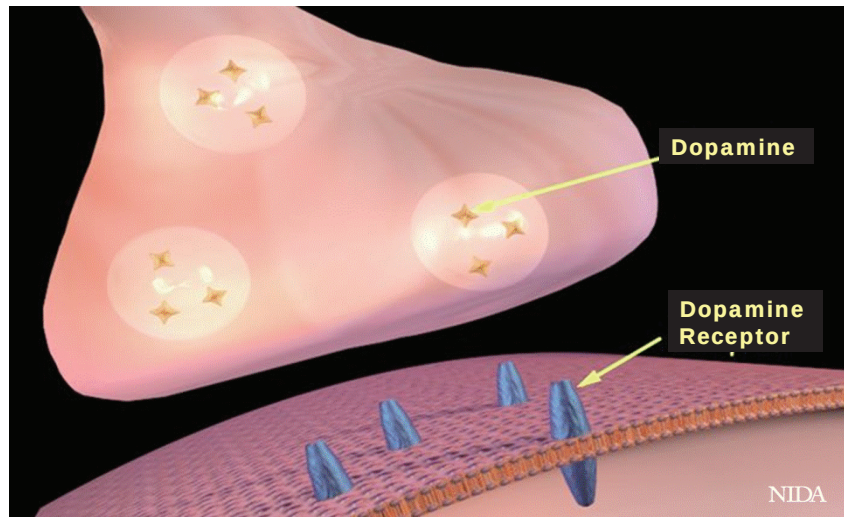
3.25

Brain Communication

- Networks of neurons pass messages back and forth to different structures within the brain, the spinal column, and the peripheral nervous system

3.26

Dopamine



NIDA

3.27

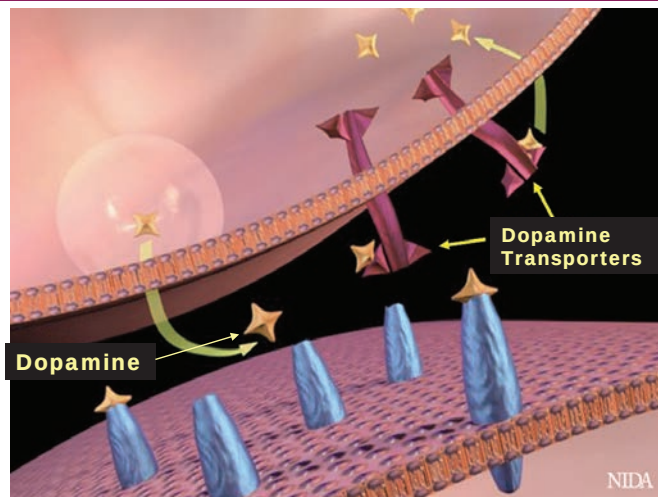
Brain Communication

- A neurotransmitter and its receptor operate like a key and lock



3.28

Brain Communication



3.29

Exercise: Normal Brain Communication

- Both correct and incorrect neurotransmitters move from sending neuron to receiving neuron
- Receiving neuron shakes hands with correct neurotransmitters, does not shake with incorrect neurotransmitters
- Transporters escort correct neurotransmitters back to sending neuron; incorrect neurotransmitters go on their own
- MOVE IN A CONTROLLED MANNER

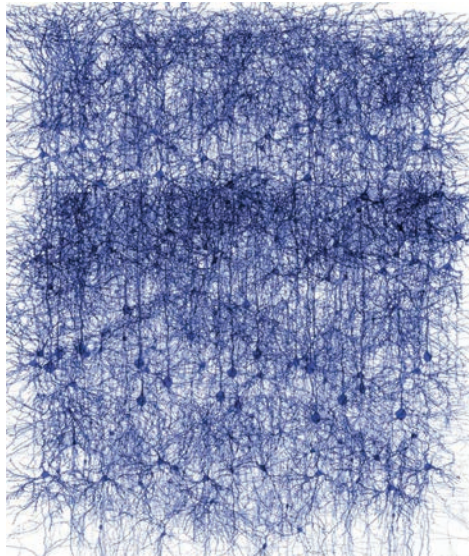
3.30

Break

15 minutes

3.31

A Cluster of Neurons



3.32

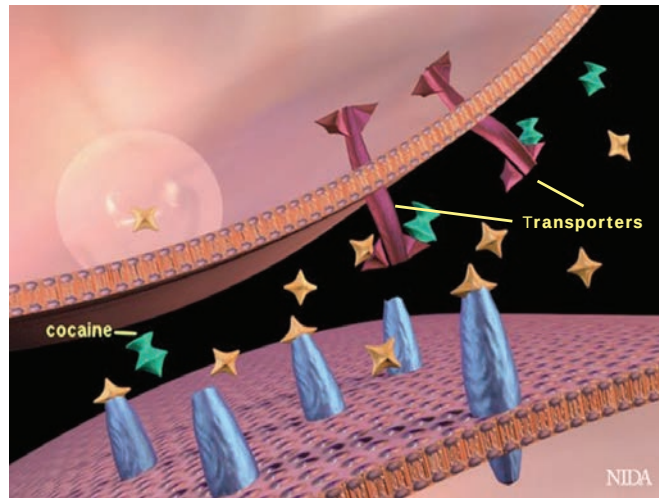
Brain Communication

- Psychoactive substances tap into the brain's communication system and mimic or disrupt the way nerve cells normally send, receive, and process information



3.33

Cocaine



3.34

Exercise: Drug-affected Brain Communication—Cocaine

- Correct neurotransmitters shake hands with receiving neuron
- Cocaine blocks transporters, not allowing them to take neurotransmitter back to sender, so...
- Neurotransmitters continue to try to make contact with receiving neuron, “mobbing” him or her

3.35

Exercise: Drug-affected Brain Communication—Heroin

- Transporters are out of the game
- Heroin people rush to receiving neuron, take his/her hands, do not let go! Stand tall, do not let neurotransmitters make contact with neuron
- Neurotransmitters, keep trying to shake hands with receiving neuron

3.36

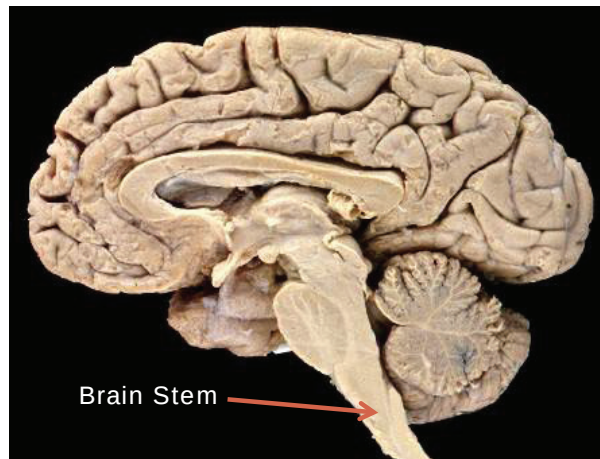
Parts of the Brain Most Affected by Substance Use

- The brain stem
- The cerebral cortex
- The limbic system

3.37

Brain Stem

Controls functions critical to life, such as heart rate, breathing, and sleeping

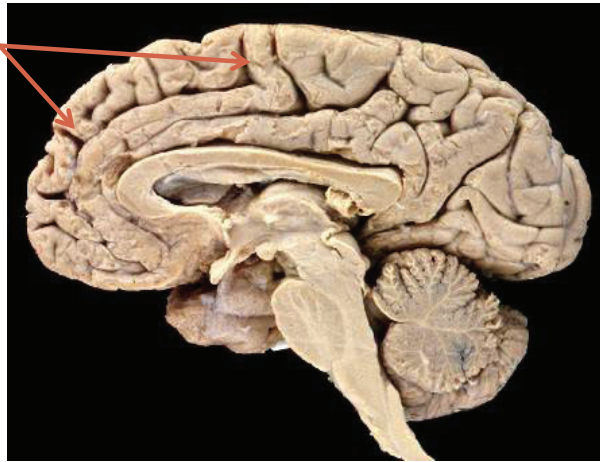


3.38

Cerebral Cortex

Cerebral Cortex

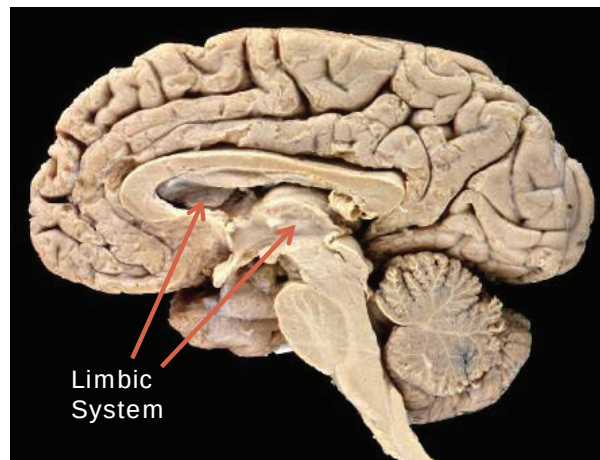
Processes information from the senses; the thinking and judgment center of the brain



3.39

Limbic System

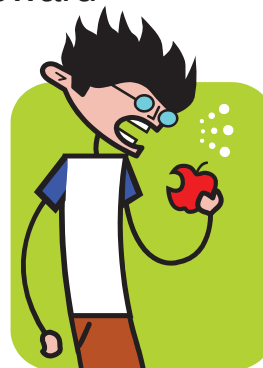
Contains the
brain's reward
circuit



3.40

Addiction and the Reward Circuit

- Our brains are wired to ensure that we repeat life-sustaining activities by associating those activities with pleasure or reward



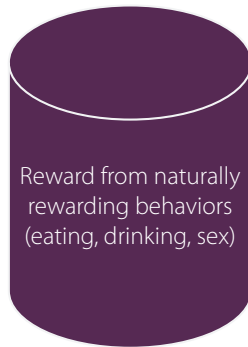
3.41

Addiction and the Reward Circuit

- The overstimulation of the reward circuit, which rewards our natural behaviors (eating, drinking, sexual behavior), produces the euphoric effects sought by people who use psychoactive substances and teaches them to repeat the behavior

3.42

Effects on the Brain's Pleasure Circuit



3.43

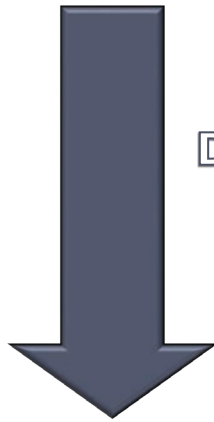
Addiction and the Reward Circuit

- The brain adjusts to the overwhelming surges in dopamine (and other neurotransmitters) by producing less dopamine or by reducing the number of receptors



3.44

Addiction and the Reward Circuit



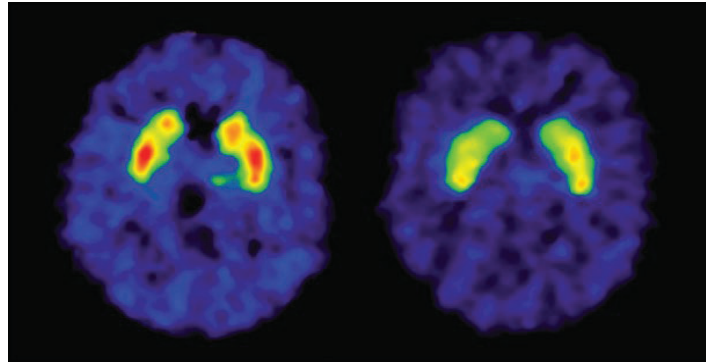
Dopamine $\equiv$



3.45

Dopamine Receptor Availability

Red=High levels of dopamine receptors



Healthy brain

Brain with chronic cocaine use

Source: National Institute on Drug Abuse. (2007). *Science & Practice Perspectives*, 3(2).

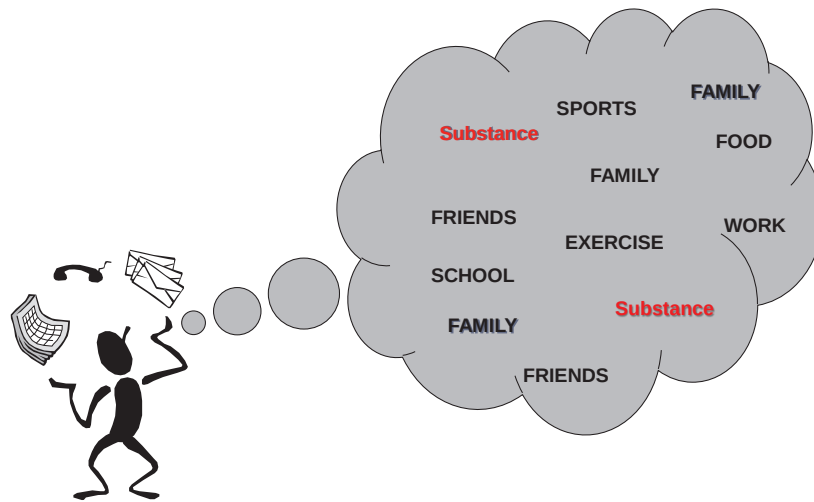
3.46

Tolerance

- Needing more of a substance to get the same effect

3.47

Progression of Addiction 1



3.48

Progression of Addiction 2

The diagram illustrates the progression of addiction. On the left, a stick figure is shown holding a telephone receiver, a stack of papers, and a calculator. Three small circles lead from the figure to a large, grey, cloud-like shape on the right. Inside this cloud, the word "Substance" is written in red at the top, bottom, and center. Other words in black are arranged around it: "SPORTS", "FOOD", "FAMILY", "WORK", "EXERCISE", "FRIENDS", "SCHOOL", and "FRIENDS".

3.49

Progression of Addiction 3

A stick figure is shown on the left, holding a telephone receiver to its ear, a stack of papers, and a calculator. A thought bubble originates from the figure, containing the word "Substance" repeated multiple times in a circular pattern, illustrating the progression of addiction.

3.50

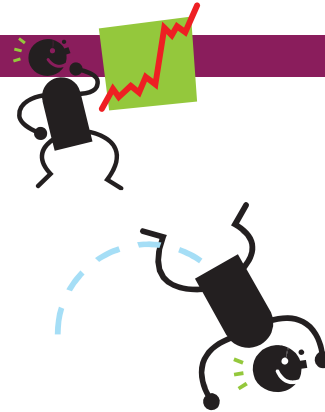
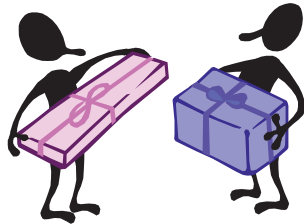
Lunch

60 minutes

3.51

Why Do People Start Using Substances?

- Curiosity
- Because friends are doing it
- To feel good; to celebrate
- To feel better
- To do better



3.52

Addiction

**No one ever *plans*
to become
addicted!**

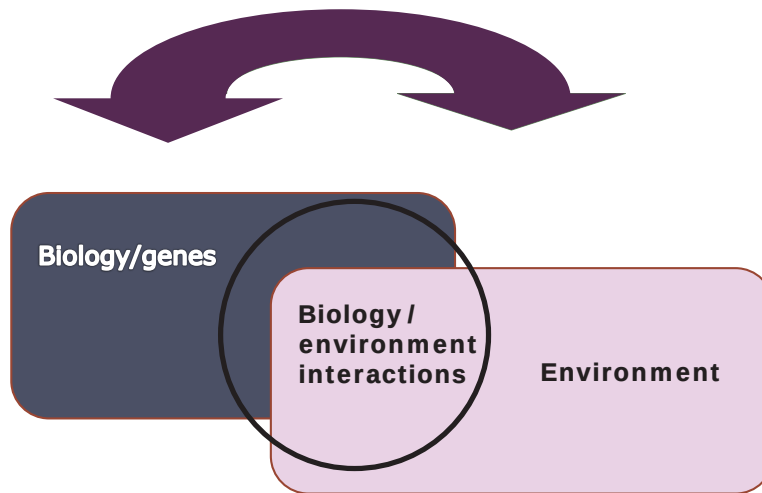
3.53

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- Vulnerability to addiction differs from person to person

3.54

Why Doesn't Everyone Who Tries a Substance Become Addicted?



3.55

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- Between 40 and 60% of a person's vulnerability to addiction is genetic



Source: <http://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drug-abuse-addiction>.

3.56

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- Each gene is like a book that stores information.
- A gene contains the information required to make a protein or ribonucleic acid (RNA), the building blocks of life



3.57

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- The DNA sequences of any two individuals are 99.9% identical
- However, that 0.1% variation is profoundly important

NIDA. 2019, August 5. Genetics and Epigenetics of Addiction DrugFacts

3.58

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- Most diseases, including addiction, are complicated
- Addiction arises from complex interactions among multiple genes and from genetic interactions with environmental influences

3.59

Why Doesn't Everyone Who Tries a Substance Become Addicted?

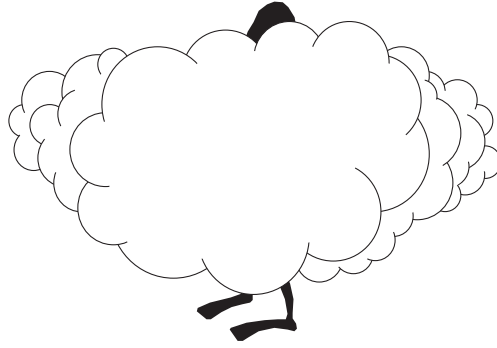
■ Environmental factors play a role

- ▣ Home
- ▣ School
- ▣ Neighborhood
- ▣ Family and friends
- ▣ Cultural customs and mores

3.60

Why Doesn't Everyone Who Tries a Substance Become Addicted?

- *How* a substance is used is a factor
 - ▣ Smoking or injecting a substance increases its addictive potential



3.61

Small-Group Exercise: Case Study

- Create a fictional case study that illustrates *progression* of addiction
- Include:
 - ▣ Behavior changes
 - ▣ Biological factors
 - ▣ Environmental factors
- Be creative!

3.62

Break

15 minutes

3.63

Module 3—Science Of Addiction, Summary

- People have had many different ideas about addiction over the centuries. Many people still see addiction as a character flaw, a personality disorder, or a moral failing rather than as a health problem.
- We now know that substance addiction is not just a lot of drug use:
 - Addiction is now thought of as a chronic disease, one that often tends to remain throughout a person's life and is as much a disease as diabetes or hypertension.
 - A chronic disease is not curable, but it is manageable.
- The U.S. National Institute on Drug Abuse defines addiction as:
 - A chronic, relapsing brain disease that is characterized by compulsive substance seeking and use, despite harmful consequences.¹
- A common definition of disease is any alteration of the normal structure or function of any body part, organ, or system that can be identified by a characteristic set of symptoms and signs. Addiction meets the criteria of disease because, like heart disease, addiction alters normal functioning in an organ, in this case the brain, and it has a characteristic set of symptoms and signs.
 - A symptom is subjective—something that is directly experienced and cannot be seen or measured by another person. Examples of symptoms include stomachache, fatigue, or dizziness. A symptom of addiction would be craving, for example.
 - A sign is an objective physical indication of disease that can be seen or measured by another person. Examples of signs include a skin rash, fever, or high blood pressure. A sign of addiction might be an abscess at an injection site or differences in brain activity measured by imaging techniques.
- Imaging techniques allow scientists to actually see what is happening in the brain in response to drug use and addiction. These techniques include:
 - Magnetic resonance imaging (MRI);
 - Positron emission tomography (PET) scan; and
 - Single photon emission computed tomography (SPECT).
- Research has shown that the addicted brain is distinctly and biologically different from the nonaddicted brain, just as a heart with heart disease is distinctly and biologically different from a healthy heart.
- A term that is often used when discussing disease is etiological, or causal, agent. The etiological agent for AIDS, for example, would be the human immunodeficiency virus (HIV). If you have a severe sore throat, the agent might be the streptococcus bacterium.

1. NIDA. 2020, July 13. Drug Misuse and Addiction

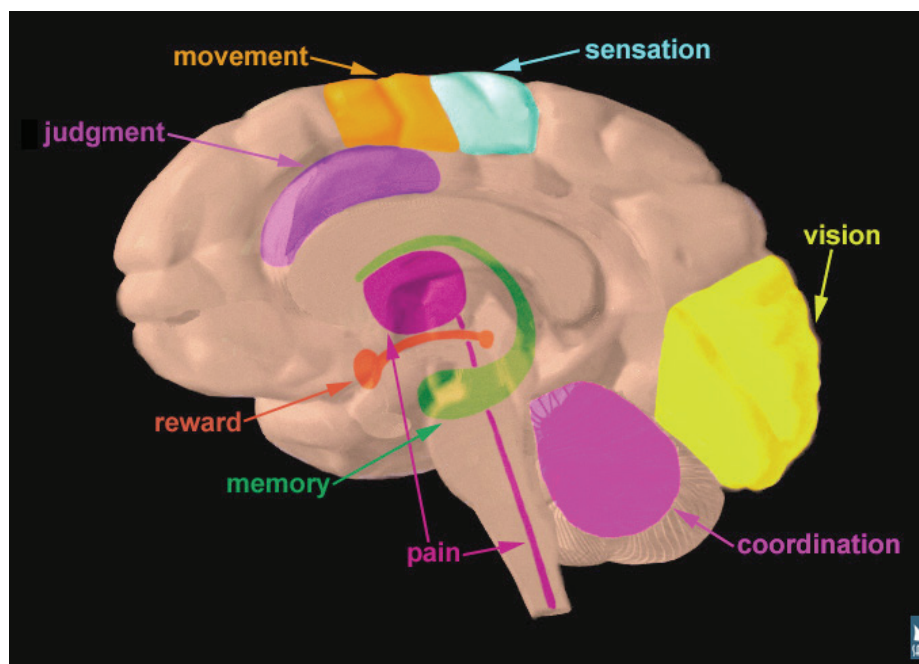
- With addiction, the etiological agent can be considered the substance used.
- Not all diseases have an external etiological agent. Heart disease and diabetes are examples.
- But even for diseases with an identifiable external cause, like a cold virus, other factors play a role. Just as not everyone exposed to a cold virus will actually get a cold, not everyone who is exposed to a substance will become addicted to it. Although the etiological agent is necessary for the disease to develop, it is usually not enough in and of itself.
- The environment and lifestyle issues play important roles in development of heart disease. In addition, a person's genetic makeup also plays an important role.
- The same is true of addiction. For example, the studies of identical twins that as much as half of an individual's risk of becoming addicted to nicotine, alcohol, or other drugs depends on his or her genes.¹
- Another disease term is pathogenesis, or the progression of a disease from its origins through its critical development and expected outcomes. Most diseases, when untreated, follow a generally predictable path of symptom development and biological changes. This is also true of addiction. We'll be talking about the progression of addiction later in the module. For now, let's move on to look at the chronic disease part of the definition of addiction.
- Another element of the definition of addiction is chronic disease. Chronic disease is defined as one that is long lasting and that cannot be cured but can be managed.
- Addiction is defined as a chronic disease because the brain shows distinct changes after substance use that can persist long after the substance use has stopped. And, like diabetes and hypertension, it cannot be cured, but it can be managed with pharmacotherapy and counseling intervention or with counseling intervention alone.
- Addiction is considered a brain disease because psychoactive substances change the structure of the brain and how it works. These brain changes can be long lasting and can lead to addiction and the harmful behaviours associated with addiction.
- Relapsing is included in the definition because, given the chronic nature of the addiction, relapsing to substance use is not only possible, but common. Relapsing is part of all chronic diseases, not just addiction.
- Relapse rates for substance use are similar to relapse rates for other chronic diseases such as diabetes and hypertension.
- The relapse rate for drug addiction is between 40 and 60 percent. The rate for diabetes is just a bit lower, between 30 and 50 percent, and the rates for both hypertension (high blood pressure) and asthma are both even a bit higher than the rates for addiction, at between 50 and 70 percent.

1. U.S. National Institute on Drug Abuse. (2016). Genetics and epigenetics of addiction: A research update from the National Institute on Drug Abuse. Retrieved March 22, 2017, from <http://www.drugabuse.gov/publications/drugfacts/genetics-epigenetics-addiction>

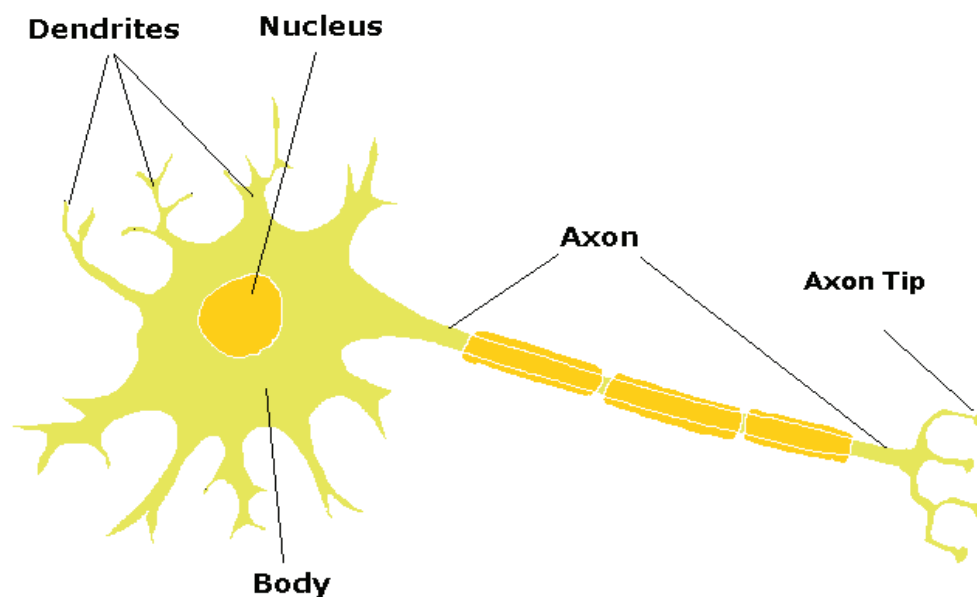
- It's important to distinguish between a lapse (sometimes called a slip) and a relapse.
 - A lapse is a brief, often one-time, return to substance use. For example, a person could run into an old friend who still uses. He or she might use with the old friend and then regret it right away. Sometimes lapses are triggered by stress, unhappiness, or fatigue.
 - A relapse is a complete return to using psychoactive substances in the same way the person did before he or she quit.
- Lapses are fairly common in the early stages of recovery. A lapse can lead to relapse, but it doesn't always, and relapse can be avoided.

Introduction to the Brain

- Different areas of the brain are responsible for different functions.
 - Movement (orange);
 - Sensation (blue);
 - Vision (yellow);
 - Coordination (pink);
 - Pain (dark pink);
 - Judgment (lightest pink)
 - Memory (green); and
 - Reward (dark orange).

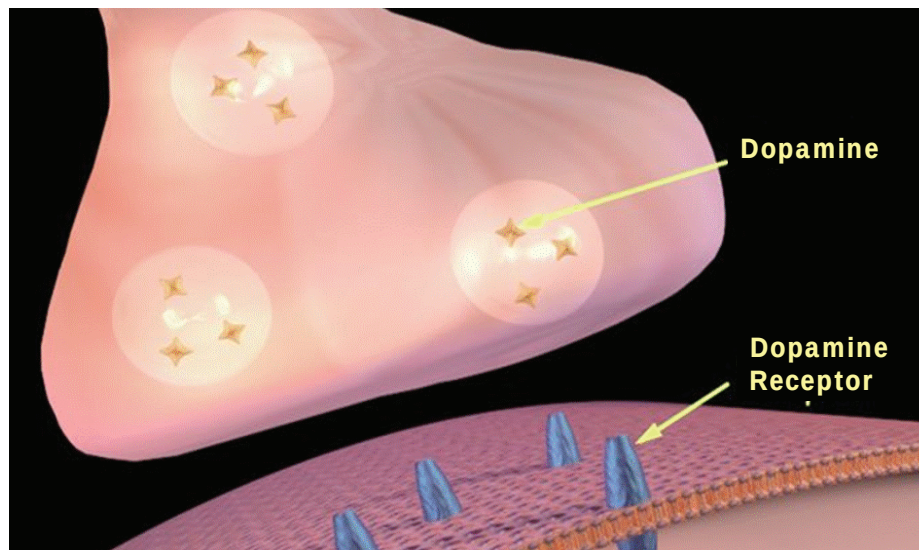


- The brain is a communications center consisting of billions of neurons or nerve cells.
- Each neuron consists of a cell body and nucleus, a tail called an axon, axon tips, and many dendrites (branch-like projections).
- A neuron sends messages to other cells through its axon tips and receives messages from other cells at its receptor sites. The cell body directs all activities of the neuron.
- Dendrites (the parts that look like tree branches) are short fibers covered with receptor sites. These receptor sites receive messages from other neurons and relay those messages to the cell body.
- The axon is a long single fiber that sends impulses, or messages, from the cell body to dendrites of other neurons. The axon is covered with a myelin sheath; myelin insulates the axon and increases the speed at which impulses travel.

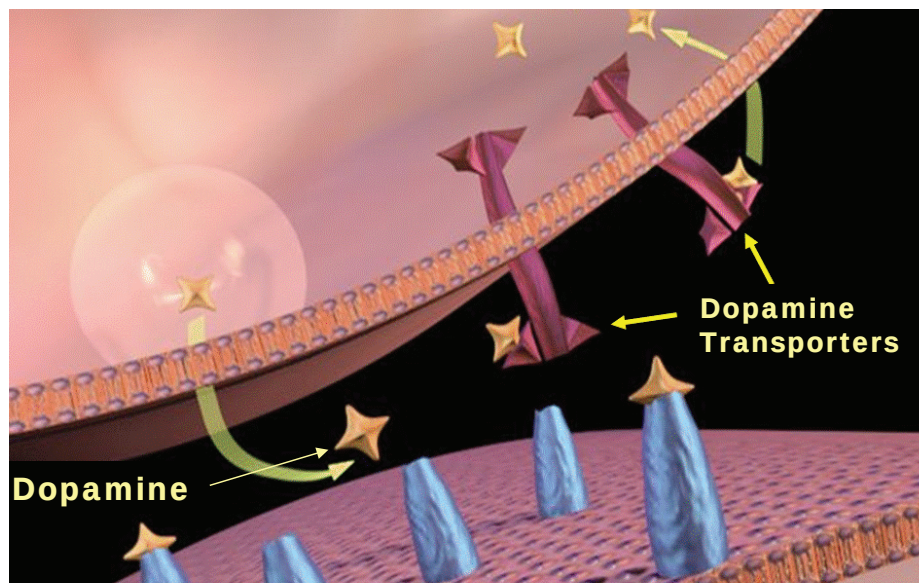


- Networks of neurons pass messages back and forth to different structures within the brain, the spinal column (the central nervous system), and the peripheral nervous system. The peripheral nervous system includes all the nerves going to your arms, legs, hands, and feet—basically all of the nerve systems outside the central nervous system.
- These nerve networks coordinate and regulate everything we feel, think, and do.
- Each nerve cell in the brain sends and receives messages in the form of chemical impulses:
 - These chemicals are called neurotransmitters.
 - The brain has many different neurotransmitters.
 - The sending neuron releases a neurotransmitter from its axon terminal across a space between neurons called a synapse or synaptic cleft.

- A neurotransmitter attaches to a specialized site on the receiving cell called a receptor.
 - Once the receiving neuron gets and processes the message, it becomes a sender and passes the message to other neurons.
- Below picture illustrates the dopamine as the neurotransmitter between neurones.
- The yellow dopamine is in the sending neuron.
 - The blue dopamine receptors are on the receiving neuron.



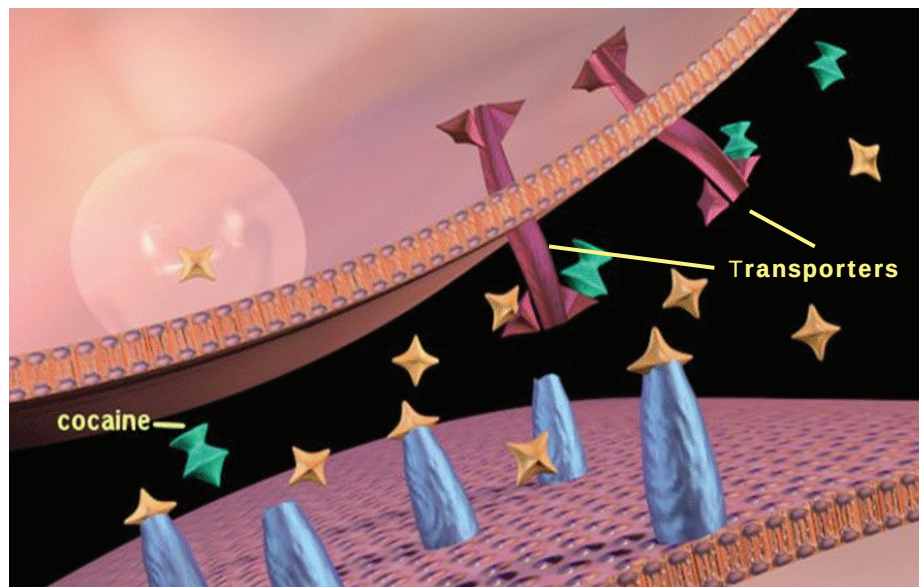
- A neurotransmitter and its receptor operate like a key and lock. Each receptor will pass on the appropriate message only after interacting with the correct kind of neurotransmitter.
- A neurotransmitter and its receptor operate like a key and lock. Each receptor will pass on the appropriate message only after interacting with the correct kind of neurotransmitter.



- Once the dopamine is released from the sending cell, crosses the synapse, and makes contact with its receptors, transporters located on the sending cell recycle the dopamine, bringing it back into the cell that released it. This is called reuptake.
- Reuptake stops the signal between neurons once the message has been communicated.

Psychoactive substances and brain communication

- Psychoactive substances are chemicals that tap into the brain's communication system and mimic or disrupt with the way nerve cells normally send, receive, and process information.
- Some psychoactive substances, like marijuana and heroin, can activate neurons because their chemical structure mimics that of a natural neurotransmitter. This similarity in structure fools receptors and allows the substances to lock onto and activate the nerve cells.
- Meanwhile, the correct neurotransmitters are blocked from communicating with the neuron.
- Although these substances mimic brain chemicals, they do not activate nerve cells in the same way as a natural neurotransmitter, and they transmit abnormal messages through the network.
- Other psychoactive substances, like amphetamine or cocaine, can cause the nerve cells to release abnormally large amounts of natural neurotransmitters or prevent the normal reuptake of these brain chemicals. This disruption produces a greatly amplified message, ultimately disrupting communication channels.
- Example—Cocaine (prevents normal reuptake):
 - Dopamine (the little orange stars) is released normally from the sending neuron and makes contact with its receptor site (blue ovals) as usual.
 - But cocaine (green squiggles) has attached itself to the transporters, and the transporters cannot do their job of recycling the dopamine back into the sending cell.
 - The dopamine keeps circulating and making contact with the receptors.
 - Meanwhile, the communication is not turning off, because the dopamine has not been returned to the sending cell.
 - So, dopamine continues to be released, and the receptors are flooded. This flooding produces cocaine's effects.



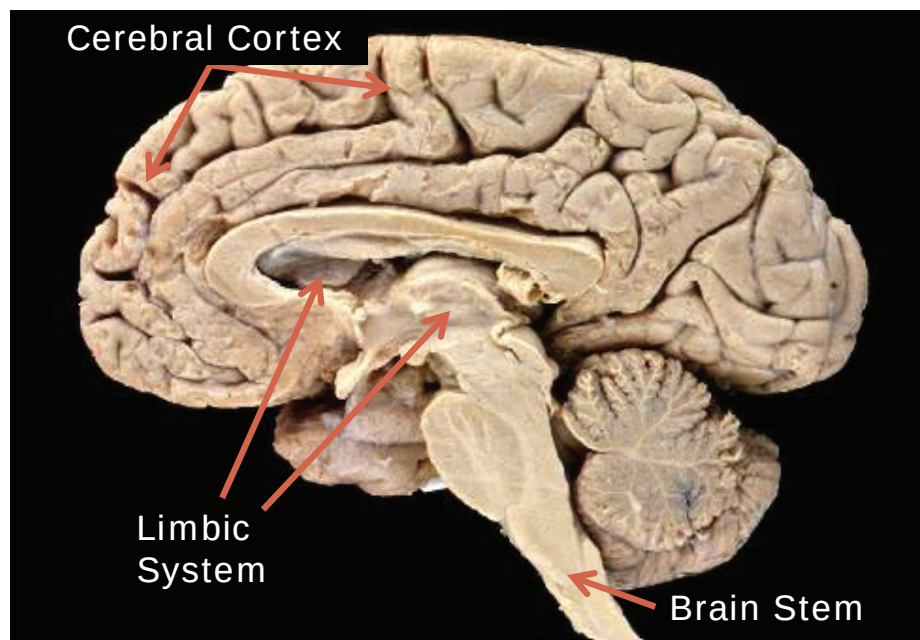
■ Example—Heroin (mimics neurotransmitters):

- Heroin's effects differ from cocaine's. Heroin mimics the action of neurotransmitters.
- The natural neurotransmitters endorphin and enkephalin are responsible for producing pleasure responses and blocking pain.
- These natural substances send their messages the same way as all neurotransmitters do—by making contact with their receptor sites. These particular sites are called opioid receptors.
- Opioid receptors recognize heroin and other opioids and allow the substances to attach.
- The opioid actually takes the place of the natural endorphin and enkephalin.
- However, the substance produces a stronger effect than that produced by the natural neurotransmitters, and there is no natural signal to stop communication.

Addiction and the reward circuit

- The way the brain communicates is the same throughout the brain. However, different parts of the brain are responsible for coordinating and performing specific functions, and certain areas of the brain are more affected by substance use than others.
- The areas of the brain most involved in substance effects and addiction are the brain stem, the cerebral cortex, and the limbic system.
- The brain stem controls functions critical to life, such as heart rate, breathing, and sleeping.
- The front part of the cortex, the cerebral cortex or forebrain, processes information from our senses and is the thinking and judgment center of the brain. It powers our ability to think, plan, solve problems, and make decisions

- The limbic system contains the brain's reward circuit. The limbic system links together a number of brain structures that control emotional memory and regulate the ability to feel pleasure. Feeling pleasure motivates us to repeat behaviors such as eating—actions that are critical to existence.
- The limbic system is activated when we perform these activities and by substances of abuse. In addition, the limbic system is responsible for the perception of other emotions, both positive and negative, which explains the mood-altering properties of many psychoactive substances.
- The limbic system is divided into areas that control specific functions. Different areas process information from our senses, enabling us to see, smell, feel, hear, and taste.



- The brain's reward circuit, in the limbic system, is critical to the development of addiction.
- Our brains are wired to ensure that we repeat life-sustaining activities by associating those activities with pleasure or reward.
- This pleasure or reward is largely related to the neurotransmitter dopamine. Certain survival activities, like eating and sex, stimulate production of dopamine.
- All psychoactive substances of abuse also directly or indirectly target the brain's reward system by flooding the circuit with dopamine and/or other neurotransmitters.
- However, substance-induced rewards are much more powerful than natural rewards. When some substances of abuse are taken, they can release 2 to 10 times the amount of dopamine that natural rewards do. In some cases, this occurs almost immediately (as when substances are smoked or injected). The effects can also last much longer than those produced by natural rewards.

- This overstimulation of the reward circuit produces the euphoric effects sought by people who abuse psychoactive substances and teaches them to repeat the behavior.
- Whenever this reward circuit is activated naturally, the brain notes that something important is happening that needs to be remembered and teaches us to do it again and again, without thinking about it. Because psychoactive substances of abuse stimulate the same circuit, people learn to abuse substances in the same way.
- The resulting effects on the brain's pleasure circuit dwarfs those produced by naturally rewarding behaviors such as eating and sex.
- The effect of such a powerful reward strongly motivates people to take psychoactive substances over and over again.
- This overstimulation of the reward system becomes even more complicated, leading the brain to try to compensate and reinstate balance.
- The brain adjusts to the overwhelming surges in dopamine (and other neurotransmitters) by producing less dopamine or by reducing the number of receptors that can receive and transmit signals.
- As a result, dopamine's impact on the reward system of the brain of a person who abuses substances can become abnormally low, and the ability to experience any pleasure induced by normal stimuli is reduced.
- This is why the person who abuses substances eventually feels listless and depressed and cannot enjoy things that previously brought pleasure.
- Now, the person needs to take the substance just to bring the dopamine function back to normal. The person must take larger amounts of the substance than he or she first did to create the dopamine high—an effect known as tolerance.
- Just as continued abuse may lead to tolerance (the need for more of the drug to produce the same effect), it may also lead to addiction, which can drive the person to seek out and take psychoactive substances compulsively.
- Substance addiction erodes a person's self-control and ability to make sound decisions, while sending intense impulses to take psychoactive substances. Over time, the person spends less time thinking about other areas of his or her life and more time thinking about finding and using psychoactive substances.
 - At first, the person is using a substance casually or experimentally (the recreational or circumstantial use talked about yesterday). Other interests remain intact and in balance.
 - At first, the person is using a substance casually or experimentally (the recreational or circumstantial use talked about yesterday). Other interests remain intact and in balance.
 - Eventually, the person is spending most of his or her energy on finding and using substances (compulsive use or addiction).

Vulnerability to addiction

- People start using psychoactive substances for a variety of reasons:
 - Curiosity;
 - Because friends are doing it;
 - To feel good and to celebrate;
 - To feel better; and
 - To do better.
- Substances make us feel good. Most abused substances produce intense feelings of pleasure. An initial sensation of euphoria is followed by other effects, which differ with the type of substance used. For example, with stimulants such as cocaine, the high is followed by feelings of power, self-confidence, and increased energy. In contrast, the euphoria caused by opioids such as heroin is followed by feelings of relaxation and satisfaction.
- Some people start because they want to feel better. For example:
 - To lessen feelings of depression or sadness;
 - To feel less anxious;
 - To reduce stress;
 - To feel less tired;
 - To lessen physical pain; and
 - To feel more at ease socially.
- Some people start using a substance because it was prescribed for a medical reason (usually pain).
- Some people who suffer from social anxiety, stress-related disorders, and depression begin abusing substances to lessen feelings of distress. Stress can play a major role in beginning substance use, continuing substance abuse, or relapse in those recovering from addiction.
- Some people start using psychoactive substances to do better.
 - To improve concentration or be able to study longer;
 - To feel “sharper”;
 - To improve athletic performance; and
 - To do more work in a shorter period of time or stay awake longer.
- No matter what a person’s reason for starting to use psychoactive substances, no one ever plans to become addicted.

- People who use psychoactive substances are just trying it, once or a few times. Every person who has a substance use disorder starts out as an occasional user, and that initial use is a voluntary and controllable decision.
- As time passes and use continues, a person can go from voluntary use to compulsive use.
- So, why doesn't everyone who tries a substance become addicted?
 - The reason is that vulnerability to addiction differs from person to person. In general, the more risk factors an individual has, the greater the chance that taking psychoactive substances will lead to abuse and addiction.
- No single factor determines whether a person will become addicted. The overall risk for addiction is affected by both biological and environmental factors and by the interaction between the two.
- Gender or ethnicity affects risk, and individuals with mental disorders appear to be at greater risk of substance abuse and addiction than is the general population.
- Age is also important. Although taking psychoactive substances at any age can lead to addiction, research shows that the earlier a person begins to use, the more likely he or she will progress to more serious abuse.¹
- Scientists estimate that genetic factors account for between 40 and 60 percent of a person's vulnerability to addiction, including the effects of environment on gene expression and function.
- There is some evidence that even the likelihood a person will start using a substance may be largely affected by genetic factors. For example, a recent (and large) study found that use of marijuana and alcohol appeared to be affected by common genetic factors.²
- Genes are functional units that make up our DNA. Each gene is like a book that stores information. A gene contains the information required to make a protein or ribonucleic acid (RNA), the building blocks of life.
- Research on the human genome has shown that the DNA sequences of any two individuals are 99.9 percent identical. However, that 0.1 percent variation is profoundly important, contributing to visible differences, like height and hair color, and to invisible differences, such as increased risks for, or protection from, heart attack, stroke, diabetes, and addiction.³

1. U.S. National Institute on Drug Abuse. (2014). Drugs, Brain and Behavior: The science of addiction. Retrieved on March 22, 2017 from <http://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drug-abuse-addiction>.

2. Sartor, C.E., Grant, J.D., Bucholz, K.K., Madden, P.A.F., Heath, A.C., Agrawal, A., et al. (2010). Common genetic contributions to alcohol and cannabis use and dependence symptomatology. *Alcoholism: Clinical and Experimental Research*, 34(3), 545–554.

3. NIDA. 2019, August 5. Genetics and Epigenetics of Addiction DrugFacts

- Some diseases, like sickle cell anemia or cystic fibrosis, are caused by an error in a single gene. However, most diseases, including addiction, are more complicated, arising from complex interactions among multiple genes and from genetic interactions with environmental influences.
- For example, susceptibility to high blood pressure is influenced by both genetics and lifestyle, including diet, stress, and exercise. Research suggests that genes can also influence how a person responds to his or her environment, placing some individuals at higher risk than others.
- There are some of the environmental factors that influence development of addiction. These factors include conditions at home, at school, at work, or in the neighborhood.
- Parents or older family members who abuse psychoactive substances or who engage in criminal behavior can increase children's risks of developing substance problems.
- Friends and acquaintances have the greatest influence during adolescence, but they can influence use at any age. Lack of family or other social support, poor social skills, traumatic experiences, and similar factors also increase a person's risk of addiction.
- Cultural factors play a role as well. If a particular culture strongly discourages use of substances, the rate of addiction may be lower. However, if substance use is an integral part of cultural celebrations, there may be few disincentives for a person to start and continue use.
- How a substance is used is also a factor. Smoking or injecting a substance increases its addictive potential. Both smoked and injected substances enter the brain within seconds, producing a powerful rush of pleasure.
- However, this intense high can fade within minutes, taking the person using the substance down to lower than normal levels. It is a stark contrast, and scientists believe that this low feeling drives individuals to repeated substance use to recapture the high, the pleasurable state.

MODULE 4

SOCIAL STIGMA

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Content and Timeline	
Activity	Time
Introduction to Module 4	10 minutes
Presentation: Social stigma	25 minutes
Small-group exercise: Stigma role-play	60 minutes
Day 2 wrap-up	20 minutes

Module 4 Goal and Objectives

Training goal

To introduce the concept of social stigma and stimulate thinking about stigma and its possible effects.

Learning objectives

Participants who complete Module 4 will be able to:

- Define social stigma;
- Describe the possible effects of stigma related to addiction; and
- Describe at least three strategies for counteracting stigma.



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UTC 1

Introduction to the
Science of Addiction



MODULE 4—SOCIAL STIGMA



Module 4 Learning Objectives

- Define social stigma
- Describe the possible effects of stigma related to addiction
- Describe at least three strategies for counteracting stigma

4.2

Social Stigma

- Stigma is defined as "a mark, a sign, a deeply discrediting and dishonorable attribute that reduces someone from a whole and usual person to a tainted, discounted one". The identity of the person is reduced to this attribute:
 - ▣ It causes an individual to be mentally classified by others in an undesirable, rejected stereotype rather than in an accepted, normal one
 - ▣ It is defined as a special kind of gap between virtual social identity and actual social identity

Goffman, Erving (2009). *Stigma: Notes on the Management of Spoiled Identity*. New York: Simon and Schuster. p. 1.
ISBN 978-0-671-62244-2

4.3

How does stigma develop?

Stigma can arise when certain social processes co-occur within a power dynamic:

- labeling (assignment of social categories)
- stereotyping (labels are related to stereotypes)
- separating (them-us)

In other words, stigma can occur when power is exercised by a predominant social group, a referent of what is considered "normal", over a minority group who has less power.

Link, B.G y Phelan, J.C, Conceptualizing Stigma, Annual Review of Sociology 27 863-385), 2001.

4.4

DISCRIMINATION

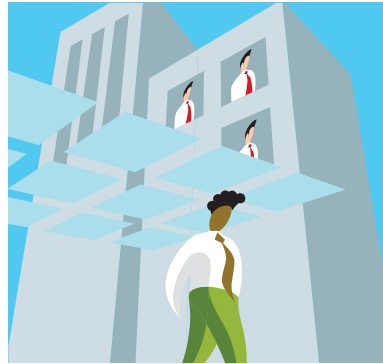
- Discrimination, occurs when individuals with SUDs are perceived as less valued and treated unjustly (i.e., discriminated against) by others. Discrimination can occur either when individuals treat another person unfairly, or when institutional practices disadvantage individuals with SUDs.

(Ref: Lawrence Yang, Liang Y. Wong, Margaux M. Grivel, and Deborah S. Hasin (2017)

4.5

Social Stigma

- Social stigma often leads to status loss, discrimination, and exclusion from meaningful participation in society



4.6

Social Stigma

- Stigma can interfere with effective treatment:
 - ▣ A person who sees that addiction is stigmatized may feel shame and be reluctant to seek treatment
 - ▣ Social supports for recovery may not be adequate in a community that stigmatizes addiction

4.7

Stigma Study

- A number of qualitative studies have provided an overview of the stigma experiences of those in need of treatment for substance abuse. Feelings of shame, embarrassment and guilt were reported.
- People with SUDs also reported a need for secrecy about both their use and any attempts to seek treatment.
- Feelings and need for secrecy stemmed from a strong desire to avoid accepting the identity of “addict” or “junkie”.
- Participants said they had sought help from a general practitioner specifically to avoid stigma from social sources, while those in other studies said that emotional support from loved ones had facilitated seeking formal help for substance abuse.

4.8

Stigma Negatively Impacts Recovery

Stigma, in the form of discrimination and prejudice, can exclude people with substance use disorders from activities open to others. This can impact recovery negatively by limiting their ability to:

- Get/keep employment
- Get/keep housing
- Get health care (including MH/SUDs Treatment)
- Be accepted by family/friends
- Find/make friends or have other long-term relationships
- Take part in social activities

4.9

Stigma

- The stress of hiding an SUD either out of shame or to avoid stigmatizing responses from others can cause other medical and social problems and make it harder to seek treatment



4.10

Stigma Among Health Professionals

- Health professionals generally had a negative attitude towards patients with substance use disorders. They perceived violence, manipulation, and poor motivation as impeding factors in the healthcare delivery for these patients.
- Health professionals also lacked adequate education, training and support structures in working with this patient group.
- Negative attitudes of health professionals diminished patients' feelings of empowerment and subsequent treatment outcomes.
- Health professionals are less involved and have a more task-oriented approach in the delivery of healthcare, resulting in less personal engagement and diminished empathy.

4.11

Language of Stigma

- Drug addict
- Druggie
- Stoner
- Throwaway
- Being high
- Abuser

4.12

Language of Stigma

- Clean
- Dirty

4.13

Recovery Language: People First

- Person with a substance use disorder
- Person who injects drugs
- Person with addiction

4.14

Small-Group Exercise: Stigma Role-Play

- Use the case study you created in the last exercise as a base
- Develop a 3-4 minute role-play that illustrates stigma

4.15

Stigma

- Can lead to self-fulfilling predictions that those who are addicted cannot recover or play positive and productive social roles
- Can lead to discrimination (e.g., employers not wanting to hire anyone who is in recovery)
- Can lead those who are addicted to feel hopeless and reluctant to seek help

4.16

Words Matter. Avoiding Stigmatic Language on SUD Treatment

- Stigmatizing language can negatively influence health care provider perceptions of people with SUD, which can impact the care they provide.
- Stigmatizing language and disrespectful behaviour affect the way people with SUD see themselves and how they are treated by society as a whole.
- It is important to remember that a substance use disorder should be treated as a medical condition.
- Shifting language to more accurately reflect the nature of the health condition can lead to wider support of life-saving interventions.

4.17

Dealing with Stigma in SUD Treatment

■ Non-stigmatizing language. Some actions to take:

- Training physicians, nurses, nurse practitioners, physician assistants, and emergency department staff in providing compassionate care to patients who may display the difficult, sometimes frightening behaviors associated with drug addiction and withdrawal.
- To promote awareness of addiction as a chronic relapsing (and treatable) brain disease.
- Use person-first language and let individuals choose how they are described. Person-first language maintains the integrity of individuals as whole human beings—by removing language that equates people to their condition or has negative connotations.

4.18

Reflective Exercise

- Are you surprised by anything you've heard?
- Are you having trouble accepting a chronic disease model of addiction?
- Has your thinking changed in any way?
- What are some ways you might be able to fight stigma in your community?

4.19

Module 4—Social Stigma, Summary

Social Stigma

- Stigma is defined as a mark, a sign, a deeply discrediting and dishonorable attribute that reduces someone from a whole and usual person to a tainted, discounted one. It is an attribute, behavior, or reputation which is socially discrediting in a particular way:
 - it causes an individual to be mentally classified by others in an undesirable, rejected stereotype rather than in an accepted, normal one.
 - It is defined as a special kind of gap between virtual social identity and actual social identity.¹
- Stigma can arise when certain social processes co-occur within a power dynamic:
 - labeling (assignment of social categories)
 - stereotyping (labels are related to stereotypes)
 - separating (them-us)
- In other words, stigma can occur when power is exercised by a predominant social group, a referent of what is considered “normal”, over a minority group who has less power.²
- It is important to note that, both public and private institutions, including treatment programs, also play a role in building stigma for people using substances. It is therefore of paramount importance that institutions review their practices, reflect on their conceptualizations regarding the population to be served and develop education and training initiatives.
- Discrimination, occurs when individuals with SUDs are perceived as less valued and treated unjustly (i.e., discriminated against) by others. Discrimination can occur either when individuals treat another person unfairly, or when institutional practices disadvantage individuals with SUDs.
- Social stigma often leads to status loss, discrimination, and exclusion from meaningful participation in society
- Stigma tends to arise when the true nature of a condition is not understood. Stigma can interfere with effective treatment of any disease, including substance use disorders (or SUDs). For example:
 - A person who sees that addiction is stigmatized may feel shame and may be reluctant to seek treatment; and
 - Social supports for recovery may not be adequate in a community that stigmatizes addiction.

1. Goffman, Erving (2009). *Stigma: Notes on the Management of Spoiled Identity*. New York: Simon and Schuster. p. 1. ISBN 978-0-671-62244-2

2. Link, B.G y Phelan, J.C, *Conceptualizing Stigma*, Annual Review of Sociology 27 863-385), 2001.

- People with addiction often have other conditions or experiences that also may be stigmatized, like HIV/AIDS or mental disorders.
- In a systematic search of the literature about perceived social stigma and self- stigma related to seeking treatment for SUDs and AUDs (Alcohol Use Disorders), the results about Qualitative stigma experiences found:
 - A number of qualitative studies have provided an overview of the stigma experiences of those in need of treatment for substance abuse. Feelings of shame, embarrassment and guilt were reported.
 - People with SUDs also reported a need for secrecy about both their use and any attempts to seek treatment. This secrecy was linked to perceptions of stigma from health care providers in general practice and emergency settings, who may be the first source of help available, and thus the need for secrecy was said to lead to delays in treatment seeking.
 - Two studies suggested that these feelings and need for secrecy stemmed from a strong desire to avoid accepting the identity of “addict” or “junkie”, while two more found that even those who had attempted to seek treatment may disengage when identity conflicts arise.
 - On the other hand, participants in one study said they had sought help from a general practitioner specifically to avoid stigma from social sources, while those in other studies said that emotional support from loved ones had facilitated seeking formal help for substance abuse.¹
- Stigma, in the form of discrimination and prejudice, can exclude people with substance use disorders from activities open to others. This can impact recovery negatively by limiting their ability to:
 - Get/keep employment Get/keep housing
 - Get health care (including Mental health/SUD Treatment)
 - Be accepted by family/friends
 - Find/make friends or have other long-term relationships
 - Take part in social activities²
- Stigma is a difficult aspect of addiction, as it becomes more complex for individuals and families to deal with their problems and get the help they need. People who are stigmatized often internalize the rejection that stigma carries, transforming it into shame.

1. Hammarlund, R., Crapanzano, K. A., Luce, L., Mulligan, L., & Ward, K. M. (2018). Review of the effects of self-stigma and perceived social stigma on the treatment-seeking decisions of individuals with drug- and alcohol-use disorders. *Substance abuse and rehabilitation*, 9, 115–136. <https://doi.org/10.2147/SAR.S183256>

2. Corrigan P, Watson, A., (2002) Understanding the impact of stigma on people with mental illness. *World Psychiatry*, 1 (1):16-20

- The authors of the University of Nevada study found that people who feel they have to cope with an addiction alone (what they called “secrecy coping”) had poorer mental health that appeared to decrease their chances of recovery.
- Secrecy coping also can make accessing treatment more difficult. For example, fear often prompts adolescents to hide a substance problem from their parents. When parents do find out, stigma can make them feel guilty and ashamed. They then may find it harder to fight for the care and resources their child urgently needs.
- Treatment systems and helpers are not immune from prejudice. Treatment professionals also may unthinkingly stigmatize clients with the language they use and other negative attitudes towards clients.¹
- Health professionals generally had a negative attitude towards patients with substance use disorders. They perceived violence, manipulation, and poor motivation as impeding factors in the healthcare delivery for these patients.
- Health professionals also lacked adequate education, training and support structures in working with this patient group.
- Negative attitudes of health professionals diminished patients’ feelings of empowerment and subsequent treatment outcomes.
- Health professionals are less involved and have a more task-oriented approach in the delivery of healthcare, resulting in less personal engagement and diminished empathy.
- Commonly used to describe clients and their problems:
 - Drug addict
 - Druggie
 - Stoner
 - Throwaway
 - Being high
 - Abuser
- These terms be stigmatizing for several reasons:
 - They make no distinction between the person and the disease, denying the dignity and individuality of the person.
 - They imply a permanency to the condition of having an SUD, leaving no room for a change in status.
 - They are frequently used as slurs by the general public.

1. Leonieke C. van Boekel, Evelien P.M. Brouwers, Jaap van Weeghel, Henk F.L. Garretsen, Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review, *Drug and Alcohol Dependence*, Volume 131, Issues 1–2, 2013, Pages 23-35, ISSN 0376-8716, <https://doi.org/10.1016/j.drugalcdep.2013.02.018>. (<https://www.sciencedirect.com/science/article/pii/S0376871613000677>)

- Similarly, terms like “clean” and “dirty” reinforce stigma. When clean is used to describe someone in recovery, it implies that he or she once was dirty. When these terms are used to describe the positive or negative results of a drug test, which should be associated to the symptoms of a disease, they are associated to dirt, reinforcing the stigmatizing language.
- One way to avoid using stigmatizing language is to remember to put people first:
 - Person with a substance use disorder;
 - Person who injects drugs; or
 - Person with addiction.
- The terms “client” and “patient” describe a person’s current status in treatment, and not who they are as individuals.
- The perception that those with addiction are somehow less than human, or worthless, can:
 - Lead to self-fulfilling prophecies, by believing that people suffering from addiction cannot recover or play a positive or productive role in society.;
 - Lead to discrimination (e.g., employers not wanting to hire anyone who is in recovery); and
 - Lead those who are addicted to feel hopeless and reluctant to seek help.
- There are no easy ways to address stigma, but being aware of the effects of stigma and working to recognize and deal with negative thoughts and feelings toward those who are addicted can lead to more positive outcomes for individuals and, eventually, society.
- Counselors who work with people with addiction are not immune to feelings of prejudice. Honestly evaluating your own attitudes and feelings can help you work more effectively with your clients.

Avoiding Stigmatic Language on SUD Treatment

- The terms counselors use to refer to their clients and families matter! Calling someone an “addict” dehumanizes that person and can link a substance use disorder to their individual identity. A person is not defined by their illness or health condition.
- Stigmatizing language can negatively influence health care provider perceptions of people with SUD, which can impact the care they provide the way people with SUD see themselves and how they are treated by society as a whole. It is important to remember that a substance use disorder should be treated as a medical condition.
- Shifting language to more accurately reflect the nature of the health condition can lead to wider support of life-saving interventions.
- Some terms to avoid, terms to use, and why can be found to reduce stigma and negative bias when talking about addiction. Please visit NIDA: <https://www.drugabuse>.

gov/nidamed-medical-health-professionals/health-professions-education/words-matter-terms-to-use-avoid-when- talking-about-addiction.

- Clinicians are typically the first points of contact for a person with an SUD, health professionals should “take all steps necessary to reduce the potential for stigma and negative bias.” Take the first step by learning the terms to avoid and use. When talking to people with SUD, their loved ones, and your colleagues, use non-stigmatizing language that reflects an accurate, science-based understanding of SUD and is consistent with your professional role. Some actions to take:
 - Training physicians, nurses, nurse practitioners, physician assistants, and emergency department staff in providing compassionate care to patients who may display the difficult, sometimes frightening behaviors associated with drug addiction and withdrawal.
 - To promote awareness of addiction as a chronic relapsing (and treatable) brain disease.
 - This effort should include promoting understanding of the disease’s behavioral consequences as well as of the factors that make certain people particularly vulnerable. Susceptibility to the brain changes leading to compulsive substance use is substantially modulated by genetic, developmental, psychiatric, and social factors, many of which are out of the person’s control.
 - Use person-first language and let individuals choose how they are described. Person-first language maintains the integrity of individuals as whole human beings—by removing language that equates people to their condition or has negative connotations. For example, “person with a substance use disorder” has a neutral tone and distinguishes the person from his or her diagnosis.¹
- If we want addiction destigmatized, we need a language that’s unified. We have seen that the words we use matter. Caution needs to be taken, especially when the disorders concerned are heavily stigmatized as substance use disorders are. The Recovery Research Institute developed a glossary, *The Addictionary*, of over 200 top addiction related words defined, to help medical professionals and the general public modify their language about addiction. Watch for (stigma alert) items.²

1. Nora D. Volkow, M.D. Stigma and the Tool of Addiction” April 2, 2020 N Engl J Med 2020; 382:1289-1290 DOI: 10.1056/NEJMp1917360

2. Recovery Research Institute, *The Addictionary*. <https://www.recoveryanswers.org/addiction-ary/>

MODULE 5

SUBSTANCES OF ABUSE: CHARACTERISTICS AND CONSEQUENCES

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Content and Timeline	
Activity	Time
Welcome and reflection review	45 minutes
Introduction to Module 5	5 minutes
Presentation: Review of drugs of abuse	10 minutes
Small-group exercise: Characteristics, effects, and health consequences of specific drugs, Part 1—Preparation	45 minutes
<i>Break</i>	<i>15 minutes</i>
Small-group exercise: Characteristics, effects, and health consequences of specific drugs, Part 2—Presentations	60 minutes
Presentation: Consequences of drug use	20 minutes
Small-group exercise: Consequences of drug use	30 minutes
<i>Lunch</i>	<i>60 minutes</i>
Small-group exercise: Drug use in the community	45 minutes
Presentation: Family systems	30 minutes

Module 5 Goals and Objectives

Training goals

- To provide a comprehensive overview of psychoactive substance of abuse;
- To describe short- and long-term physiological and psychological effects of psychoactive substances;
- To provide a chance to discuss drug use in participants' communities; and
- To provide an overview of effects of drugs on the family.

Learning objectives

Participants who complete Module 5 will be able to:

- Describe at least three characteristics of drugs in each substance class;
- Discuss the individual, family, and community consequences of substance use;
- Discuss substance use in the community; and
- Discuss the effects of drug use on the family.



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MODULE 5—SUBSTANCES OF ABUSE: CHARACTERISTICS AND CONSEQUENCES



DAP
Drug Advisory Programme

Reflective Exercise-Part 1

- Are you surprised by anything you've heard?
- Are you having trouble accepting a chronic disease model of addiction?
- Has your thinking changed in any way?

5.2

Reflective Exercise: Part 2

- What are some ways you might be able to fight stigma in your community?

5.3

Module 5 Introduction

- What are the characteristics of psychoactive substances?
- What are the consequences of substance use?
- How do substance-related disorders and addictive disorders affect a person's family?

5.4

Module 5 Learning Objectives

- Describe at least three characteristics of drugs in each substance class
- Discuss the individual, family, and community consequences of substance use
- Discuss substance use in the community
- Discuss the effects of drug use on the family

5.5

What is a Drug?

- *In medicine:* Any substance with the potential to prevent or cure a disease or the potential to enhance physical or mental well-being



5.6

What is a Drug?

- *In pharmacology*: Any chemical agent that alters the biochemical or physiological processes of body tissues or organisms



5.7

What is a Drug?

- *In common usage*: A substance that is used for nonmedical (e.g., recreational) reasons and often even more specifically, to illicit substances



https://pnsd.sanidad.gob.es/profesionales/publicaciones/catalogo/bibliotecaDigital/publicaciones/pdf/diccionario_preencion.pdf

5.8

Drug Classification—Review

- Stimulants—*increase* the activity of the CNS
- Depressants—*decrease* the activity of the CNS
- Opioids—*decrease* the activity of the CNS
- Hallucinogens—produce a spectrum of vivid sensory *distortions* and markedly alter mood and thinking

5.9

Psychoactive Substances

- Some psychoactive drugs do not neatly fit into the basic classes:
 - ▣ Cannabis (*marijuana and hashish*), - Synthetic Cannabinoids
 - ▣ Miraa (*Khat*)
 - ▣ Inhalants (*solvents, gases, nitrites*)
 - ▣ Dissociative anesthetics (*PCP, ketamine*)

5.10

Exercise: Characteristics, Effects, and Health Consequences of Drugs

- Draw a human figure on each piece of newsprint
- Using as few words as possible, indicate the routes of administration, effects, side effects, and medical consequences of the assigned drug or drug class on one of the figures
- Be prepared to tell participants the street names of the drugs commonly used in your area
- On the other figure, indicate withdrawal symptoms (if any)

5.11

Break

15 minutes

5.12

Consequences of Drug Use

■ Individuals may suffer a range of consequences:

- ▣ Medical
- ▣ Legal
- ▣ Social
- ▣ Economic



5.13

Differing Physiological Responses: Women

■ Compared with men, women tend to:

- ▣ Develop physical problems related to substance use sooner
- ▣ Escalate to addiction more quickly (“telescoping”)



5.14

Differing Physiological Responses: Women

- Much of the research on women has been done regarding alcohol consumption
- Newer research suggests that there is a similar pattern of rapid progression with illicit drugs

Source: Hernandez-Avila, C. A., Rounsaville, B. J., & Kranzler, H. R. (2004). Opioid-, cannabis- and alcohol-dependent women show more rapid progression to substance abuse treatment. Drug and Alcohol Dependence, 74(3), 265.

5.15

Differing Physiological Responses: Women

- Studies have traditionally used male subjects
- Significant gaps remain in knowledge of physiological effects across the continuum of a woman's life

5.16

Fetal Effects

- Effects generally range from low birth weight to developmental behavioral and cognitive deficits



5.17

Fetal Effects

- Cocaine and marijuana exposure: Impaired attention, language, and learning skills; behavioral problems
- Methamphetamine exposure: Fetal growth restriction, decreased arousal, and poor quality of movement in infants
- Untreated heroin exposure without prenatal care: risk of opioid withdrawal after birth; low birth weight - an important risk factor for delayed development.

5.18

Neonatal Abstinence Syndrome

- It can be seen with the use of opioids, alcohol, caffeine and some sedatives.
- Symptoms of NAS in a newborn can develop immediately or up to 14 days after birth.
- Some of these symptoms include blotchy skin coloring, diarrhea, excessive or high-pitched crying, fever, increased heart rate, irritability, poor feeding, rapid breathing, seizures, sleep problems, slow weight gain, trembling, vomiting.

5.19

Differing Physiological Responses: Youth

- Early drug use increases a person's chances of developing substance use-related disorders.

5.20

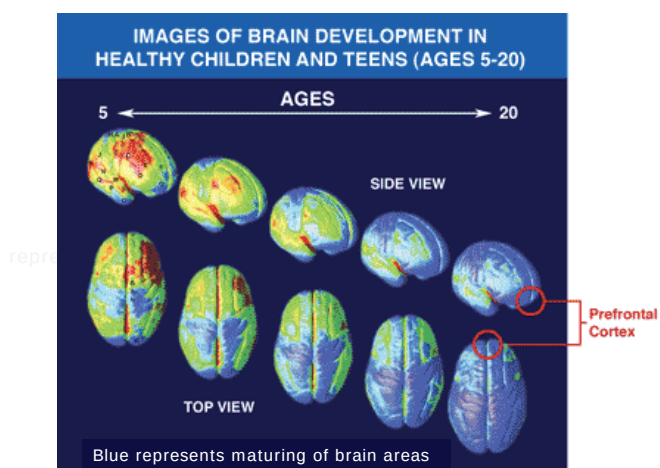
Differing Physiological Responses: Youth

- Young people also are particularly vulnerable to physical and social problems related to substance use



5.21

Differing Physiological Responses: Youth



Copyright © 2004 U.S. National Academy of Sciences. Gogtay, N., Giedd, J. N., et al. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences*, 101(21), 8174–8179.

5.22

Small-Group Exercise: Consequences of Drug Use

- For your assigned area (legal, family, social, or economic), list on newsprint consequences that:
 - ▣ Directly affect the individual
 - ▣ Affect the individual's family, friends, co-workers, and significant others

5.23

Lunch

60 minutes

5.24

Drug Use in the Community

- You probably know more about drugs and drug use in your communities than you realize
- Drug use is common among all ages
- Drug use is not limited to one socioeconomic group

Which drugs are the people you treat most likely to use?



5.25

Small-group Exercise: Drug Use and Demographic Groups

- For your assigned group, list:
 - ▣ Drugs commonly used
 - ▣ Routes of administration
 - ▣ Special problems

5.26

Family Systems

5.27

The Importance of Working with Families

- SUDs impact not only individuals, but also families
- Work with families whenever possible and appropriate
- Working with families can support an individual's recovery by:
 - ▣ Increasing adherence to treatment
 - ▣ Reducing post-treatment substance use
 - ▣ Potentially improving family functioning
- Community members/peers can also play a role in supporting the recovery process
- Families are not always part of the recovery process, and can even be a barrier
- Remember: People with SUDs can recover, even if their family is not able to be involved!

5.28

Families as a Resource for Recovery

- Families and family-run organizations are vital components of recovery-oriented service systems
- Family members can train and support other families
- There is not a one-size-fits-all solution for helping a family member living with a SUD, but family support can play a significant role in their recovery
- It is important for family members/caregivers to prioritize their own health when supporting the recovery of family member(s) with SUD.

5.29

What is a Family?

- There are multiple definitions of the word "family"
- Family definitions and compositions have changed over time
- The definition of family can vary according to different cultures

5.30

What is a Family? *(continued)*

- The family is a universal and important institution for human survival in all societies
- Families can be defined based on:
 - ▣ Structure: Who is part of the family?
 - ▣ Function: What role does the family play?

5.31

Culture and the Family

Knowledge of and sensitivity to cultures is required to determine:

- To what extent is the family's divergence from mainstream norms a function of pathology or a different cultural background?
- How is the family arranged hierarchically? Democratically? What are the communication patterns within this structure?
- How well is this family functioning? That is, to what extent can the family meet its own goals?
- What therapeutic goals are appropriate?
- What are the culture's prescribed roles for each family member?
- Who are the appropriately defined "power figures" in the family?

5.32

Family Definitions

Families are usually defined according to the following criteria:

- Kinship (birth relationships)
- Affinity (marriage)
- Share common residence
- Economic ties
- Roles in educating and parenting

5.33

Family Structures

- Nuclear Family
- Biological Family
- Adoptive Family
- Foster Family
- Families made up of same-sex parent figures
- Blended Families: Families made up of members of two (or more) previous families
- Single parent family
- Childless family
- Extended family

5.34

Defining the Family as a System

- SYSTEM: a set of related parts
- What defines this set of parts as a SYSTEM are the relationships that those parts establish with each other
- The family should be seen as a complete organism

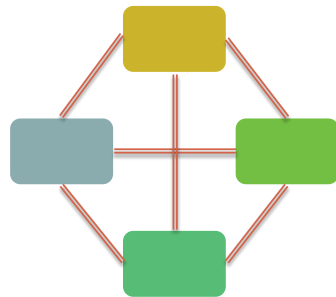
5.35

Basic Concepts of the Family as a System

- Structure: the usual, repeated behaviors that family members maintain with each other (interaction pattern).
- Hierarchy: defines or determines the distribution of power in the family.
- Roles: a group's expectations and standards regarding the position and behavior of an individual in the group.
- *Family* rules: relationship agreements (explicit or implied) that prescribe and limit the behaviors of family members.
- Boundaries: limits that regulate relationships between family members, and between family members and society; they range from rigid, flexible, and diffuse.

5.36

Exercise: The Family System



4 volunteers
representing a
family

5.37

Multi-tensioned/ Multi-stressed Families

- Multi-tensioned/ multi-stressed families are those families whose members are in difficult situations and overwhelmed by problems and crises
- This is often the case with families in which one or more of the members misuses substances or has a substance use disorder

5.38

Patterns of Family Functioning

- There are a wide variety of behaviors with varying degrees of functionality
- Families are dynamic; at different times and stages they can manifest different degrees of functionality

5.39

Behavior Patterns in Families (1 of 3)

Supportive Behaviors

1. Operate out of love, respect, concern and care.
2. They trust others; therefore, they feel free to express their needs, share their feelings, manage and negotiate disagreements and conflicts.
3. They offer opportunities for growth for all family members.

Undermining Behaviors

1. They tend to relate to fear, mistrust and low esteem.
2. There is fear of rejection; therefore, they find it difficult to express their needs, feelings, and manage disagreements and conflicts.
3. They experience disruptions in emotional development, especially in children and adolescents.

5.40

Behavior Patterns in Families (2 of 3)

Supportive Behaviors

4. Adults are close by, share authority, and support each other. At least one parent is safe and responsible.
5. They create and maintain an order. They have clear and distinct limits. The rules and guidelines are clear, consistent. They know what to expect from others and what is expected of them.

Undermining Behaviors

4. Adults tend to enter into power struggles and contradict each other; they are controlling and indifferent.
5. Boundaries and rules are unclear, rigid and/or inconsistent, which can lead to confusion, insecurity and/or manipulation.

5.41

Behavior Patterns in Families (3 of 3)

Supportive Behaviors

6. When facing crises, they seek to restore balance:
- Problem-solving and decision-making skills.
 - They cooperate and work together.

Undermining Behaviors

6. When facing crises, they learn to survive, they protect themselves by avoiding, assaulting, blaming themselves. If a member develops a SUD, they might tend to focus virtually all of their attention on him or her.

5.42

Exercise: Substance Use Disorders Within the Family System



The Family Sculpture

- One sculptor
- 4 or 5 volunteers representing a family

5.43

Families

Families need help, too!

5.44

[illegible]

Resource Page 5.1: Opioids¹ (Narcotics)

Origin

Opioids/narcotics are natural, semisynthetic, or synthetic derivatives of the opium poppy:

- *Opium* is the semidried sap of the plant and is 100 percent natural.
- Two of the most prevalent alkaloids (plant compounds with psychoactive properties) in opium are *morphine* and *codeine*.
- Morphine and codeine can be isolated and processed as separate drugs.
- *Heroin* is a semisynthetic opioid, meaning that it can be synthesized from opium.
- Other semisynthetic opioids are *hydrocodone*, *oxycodone*, and *hydromorphone*.
- Synthetic opioids are not derived from natural opium but are manufactured to work in similar ways.
- *Methadone*, *fentanyl*, and *meperidine* are synthetic opioids.

Heroin is the most widely abused opioid. Although heroin was originally developed in an attempt to find an effective painkiller with less addictive potential than morphine, it turned out to be five to eight times more powerful than morphine and to act more quickly, making it even more addicting.

Appearance of Opioids

Opium and heroin are generally sold in tar-like black or brown chunks or blocks. Heroin often is sold as a white or brown powder. Morphine is available as a liquid (for injecting) or tablet. Most synthetic opioids are available as tablets or capsules. Methadone is available in tablets or an oral liquid.

Modes of Administration of Opioids

Opioids can be taken in a variety of ways:

- Opium is most commonly smoked.
- Heroin can be smoked, inhaled (either as a powder or liquefied in a nasal spray bottle), or injected (intramuscularly or intravenously).
- Other opioids are more commonly taken orally, in tablet form.

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

- When used medically for pain relief, some opioids are administered via slow-release capsules or patches. OxyContin, a slow-release capsule, has become a major problem in some areas of the United States. People break open the capsule, dilute the contents, and inject the solution. Patches are sometimes abused by cutting them open and eating or injecting the contents.

How long an opioid high lasts depends on the specific drug. Some opioids are short acting, and some are long acting. The effects of heroin usually last 3 to 4 hours.

Medical Uses of Opioids

The primary medical use for opioids is for pain relief. Opioids also can be used to treat severe diarrhea and coughing.

“Desirable” Effects of Opioids

- Physical pain relief
- Emotional numbness
- Euphoria, followed by a sense of well-being
- Calm drowsiness or sedation
- Alternating wakefulness and drowsiness
- Dreaminess

Side Effects of Opioids

- Nausea and vomiting
- Confusion
- Slowed breathing
- Constipation
- Blurred or double vision
- “Pinpoint” pupils
- Dizziness, faintness, floating feeling, light-headedness
- Uncoordinated muscle movements, rigid muscles
- Rash, hives, itching
- Facial flushing
- Dry mouth
- Weakness

- Agitation
- Headache
- Appetite loss
- Memory loss

Possible Medical Consequences With Chronic Opioid Use

- Infection of the heart lining and valves
- Liver or kidney disease
- Pulmonary complications, including various types of pneumonia, resulting from the poor health of the user as well as from the depressing effects on respiration
- Intestinal complications resulting from chronic constipation
- Consequences directly associated with injecting, including abscesses and collapsed veins
- Spontaneous abortion

Babies born to women who are opioid addicted may have low birth weight and/or go through withdrawal, with symptoms lasting 5 to 8 weeks. Unlike adults, babies can die from opioid withdrawal.

Overdose is a major risk of opioid abuse. Signs and symptoms of opioid overdose include:

- Cold, clammy skin
- Weak, floppy muscles
- Fluid in the lungs
- Greatly lowered blood pressure and heart rate
- "Pinpoint" or dilated pupils
- Stupor
- Coma
- Slow and difficult breathing
- Bluish-colored fingernails and lips from reduced oxygen intake
- Muscle cramping

Overdose is a particular risk when opioids are combined or are used with other depressant drugs (including alcohol).

Withdrawal Syndrome of Opioids

In addition to intense drug craving, opioid withdrawal symptoms include:

- Restlessness
- Severe muscle, joint, and bone pain
- Muscle cramping
- Sweating and running nose
- Rapid pulse
- Coughing and yawning
- Dilated pupils
- Insomnia
- Diarrhea and vomiting
- Fever and chills with severe shivering and goose bumps
- Kicking movements

Symptoms can begin as early as a few hours after the last drug administration. Major withdrawal symptoms peak between 48 and 72 hours after the last dose and typically subside after about a week. Some individuals may show persistent withdrawal symptoms for months. Withdrawal from opioids is usually not medically dangerous for adults (unless the person is in very poor health) but is extremely painful. For this reason, medically managed withdrawal using medications to control symptoms is more likely to be successful than “just quitting.”

Resource Page 5.2: Stimulants¹

Origin

Stimulant drugs derive from both natural and synthetic sources:

- The cocaine alkaloid is found in the leaves of the coca bush that grows primarily in the Andes Mountains of Peru.
- Amphetamines are commercially manufactured; they include Adderall, Dexedrine, and biphphetamine. Although not as strong, some amphetamine-like drugs have similar effects and are abused to some extent: methylphenidate (Ritalin), fenfluramine, pemoline, and phentermine.
- Methamphetamine is also synthetic. It is commercially manufactured (Desoxyn) but is more typically synthesized in clandestine laboratories.
- MDMA (3,4 methylenedioxymethamphetamine), also known as ecstasy, is a synthetic, psychoactive drug that is chemically similar to both the stimulant methamphetamine and the hallucinogen mescaline, but it is generally classified as a stimulant.

Appearance of Stimulants

Commercially manufactured amphetamines are available in tablet or capsule form. Cocaine is typically available as a white powdery substance but can be processed into “crack cocaine” (a mixture of cocaine, water, and baking soda that is made into a paste and dried); the hard mixture is then broken up into “rocks,” which are smoked. Methamphetamine is typically white or yellowish, odorless, and bitter tasting and is in the form of crystalline powder or chunks.

Modes of Administration of Stimulants

Stimulants are taken:

- Orally
- By snorting (inhaled nasally after crushing tablets)
- By smoking
- By injecting after dissolving crushed tablets in water

Amphetamine effects generally last from 4 to 6 hours.

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

Cocaine is taken:

- By inhaling powder (snorting)
- By injecting
- By smoking

Cocaine is a relatively short-acting drug, and faster absorption usually means shorter duration of action. The high from inhaling cocaine may last 15 to 30 minutes, but the high from smoking it may last only 5 to 10 minutes. To sustain the high, a person who uses cocaine has to administer the drug again. For this reason, cocaine is sometimes abused in binges—taken repeatedly within a relatively short period, at increasingly higher doses.

Methamphetamine is taken:

- Orally (rarely)
- By smoking
- By inhaling nasally
- By injecting

Methamphetamine effects usually last 4 to 6 hours. When smoked, its effects may last 8 hours or longer.

Ecstasy is taken orally.

Medical Uses of Stimulants

Amphetamines are most often used to treat narcolepsy (uncontrolled and sudden episodes of sleep), obesity, and attention deficit/hyperactivity disorder (ADHD).

Cocaine is a topical anesthetic, sometimes used to numb nasal passages when inserting a breathing tube, to numb the eye or throat during surgery, and to deaden the pain of chronic sores.

Methamphetamine has been used as a treatment for ADHD and obesity.

There are no medical uses for ecstasy.

“Desirable” Effects of Stimulants

- Euphoria
- Increased energy and endurance
- Talkativeness
- Increased mental alertness
- Feelings of happiness and power

- Release of social inhibitions
- Unrealistic feelings of cleverness, great competence, and power
- Enhanced sensations of sight, sound, and touch
- Enhanced sexual desire and performance (at low doses)

Those who take ecstasy also experience:

- Heightened feelings of emotional warmth and increased empathy for self and others
- Distortions in time perception
- Heightened sensation
- Visual distortions and hallucinations

Side Effects of Stimulants

- Dilated pupils
- Increased body temperature, heart rate, and blood pressure
- Headaches
- Restlessness and insomnia
- Anxiety and irritability
- Abdominal pain and nausea
- Decreased appetite
- Increased aggression and violence
- Formication: sensations in the skin that feel like crawling bugs
- Decreased sexual response (at higher doses)
- Feelings of paranoia

From intranasal inhaling:

- Loss of the sense of smell
- Chronic nosebleeds
- Problems with swallowing
- Chronically runny nose

From smoking:

- Thirst
- Coughing
- Hoarseness

Possible Medical Consequences With Chronic Stimulant Use

- Acute cardiovascular or cerebrovascular emergencies, such as a heart attack or stroke, which may cause sudden death
- A temporary state of full-blown paranoid psychosis
- Severe dental problems, including cracked teeth from extreme jaw clenching when high and severe tooth decay resulting from dry mouth and acidic effects of cocaine or methamphetamine trickling into the mouth from nasal ingestion
- Severe bowel gangrene from ingesting cocaine as a result of reduced blood flow
- Severe allergic reactions at injection sites
- Serious respiratory complications, including pneumonia, hemorrhage, and respiratory failure from smoking
- Facial and body sores from scratching, sometimes leading to infections
- Extreme weight loss and malnutrition
- Strokes
- Heart infections
- Lung disease
- Kidney damage
- Liver damage
- When used by a pregnant woman, increased risk of:
 - Placental separation and hemorrhage
 - Premature birth
 - Birth defects, including cardiac defects, cleft palate, club foot
 - Fetal brain hemorrhage and stroke
- Overdose risk:
 - Seizures
 - Severely elevated body temperature

- Stroke
- Cardiac incidents

Chronic methamphetamine abuse significantly changes how the brain functions. Noninvasive brain imaging studies have shown alterations in brain activity that are associated with reduced motor performance and impaired verbal learning. Severe structural and functional changes also are seen in areas of the brain associated with emotion and memory.

Some of these changes persist long after methamphetamine abuse is stopped, and some reverse after sustained periods of abstinence (e.g., 2 years).

Ecstasy has its own medical risks:

- Severe dehydration (especially when mixed with alcohol), leading to heatstroke, muscle damage, and kidney failure
- Seizures
- In high doses, can interfere with the body's ability to regulate temperature
- On rare but unpredictable occasions, can lead to a sharp increase in body temperature, which can result in liver, kidney, and cardiovascular system failure and death
- Increased heart rate and blood pressure can cause serious cardiovascular problems in susceptible individuals
- Can interfere with its own metabolism (breakdown within the body), allowing potentially harmful levels to be reached by repeated MDMA administration in short periods
- Research in animals indicates that MDMA can be harmful to the brain. One study in nonhuman primates showed that exposure to MDMA for only 4 days caused damage to serotonin nerve terminals that was evident 6 to 7 years later.

Withdrawal Syndrome of Stimulants

Withdrawal symptoms depend on the dosage and length and frequency of use. Withdrawal from stimulants can be very unpleasant but is not inherently dangerous. A typical withdrawal pattern is as follows:

Immediately after a binge

- Extreme lack of energy and motivation and need for sleep
- Depression

Within a few days of abstinence

- Symptoms lessen
- Energy returns

Starting within 5 to 7 days of abstinence and lasting for weeks or months

- Severe drug cravings
- Energy level drops again
- Anhedonia (lack of feelings of pleasure)
- Increased depression
- Loss of motivation, initiative
- Vivid, unpleasant dreams
- Insomnia
- Psychomotor agitation
- Increased appetite

Resource Page 5.3: Depressants¹

Origin

The depressant category includes barbiturates (i.e., Nembutal, phenobarbital, seconal), benzodiazepines (i.e., Valium, Xanax, rohypnol), methaqualone (i.e., Quaalude, Sopor), Gamma-hydroxybutyrate (GHB), and alcohol.

Barbiturates were originally synthesized to treat anxiety, insomnia, and seizure disorders but are now rarely used for those purposes as newer medications have taken their place. Methaqualone also was used to treat insomnia but is rarely used now.

Chemically synthesized as an alternative to barbiturates, benzodiazepines were found to be more effective at lowering anxiety than barbiturates but without the oversedating effects of those medications. It was also thought that benzodiazepines had less addictive potential. There are more than 30 benzodiazepines. The most commonly used are alprazolam (Xanax), chlordiazepoxide (Librium), clorazepate (Tranxene), diazepam (Valium), lorazepam (Ativan), oxazepam (Serax), and clonazepam (Klonopin). Flunitrazepam (Rohypnol) and GHB are both associated with sexual assault in the United States.

GHB is a designer drug.

Appearance of Depressants

Tablets and capsules of varied sizes, shapes, and colors. GHB can be produced in clear liquid, white powder, tablet, and capsule forms.

Mode of Administration of Depressants

Oral

Medical Uses of Depressants

Barbiturates are sometimes used as adjuncts to general anesthesia and for certain cases of seizure disorder. Benzodiazepines are used:

- To treat anxiety, acute stress reactions, panic attacks, and sleep disorders
- To control seizures
- As muscle relaxants
- In medically managed alcohol withdrawal
- As presurgery sedation

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

“Desirable” Effects of Depressants

- Relaxation
- Decreased anxiety
- Decreased inhibitions
- Sense of well-being
- Mild euphoria

Side Effects of Depressants

- Poor concentration
- Muscle weakness
- Lack of coordination
- Slurred speech
- Dizziness
- Slowed reflexes
- Nausea and vomiting
- Impaired judgment
- Mental confusion
- Memory loss
- Emotional blunting

Possible Medical Consequences With Chronic Depressant Use

- May cause or aggravate depression
- Respiratory depression can occur at high doses or when combined with other depressant drugs, particularly alcohol
- Those who use benzodiazepines chronically may experience paradoxical effects at high doses; these effects include aggressive behavior, agitation, and lack of inhibition instead of the typical sedation and anti-anxiety effects

Depressants are sometimes primary drugs of abuse. However, they are most commonly abused along with other substances to enhance desired effects or to counter undesirable effects. For example:

- Benzodiazepines have effects similar to alcohol, and some people take them when they drink to enhance the effect. This use is highly dangerous because the risk of potentially fatal respiratory depression is greatly increased.

- People who abuse stimulant drugs often take a depressant to “come down” from excess stimulation or to sleep following a stimulant binge. This combination is associated with spasms of coronary heart muscle that can damage the heart.
- People addicted to heroin often use depressants when they can’t get heroin to ease withdrawal symptoms.

Withdrawal Syndrome of Depressants

Depressant withdrawal can be medically dangerous and difficult to manage, in part because the drugs tend to stay in body tissues for long periods. There are relatively short- and long-acting barbiturates and benzodiazepines, and the timing of expected symptoms varies depending on which type has been abused. Withdrawal symptoms may begin within 1 day for short-acting depressants but may be delayed for up to 5 days with longer acting benzodiazepines. Symptoms tend to last for 7 to 20 days for short-acting drugs and up to 28 days for longer acting drugs. Symptoms include:

- Drug craving
- Headache
- Tremors and muscle twitches
- Nausea and vomiting
- Anxiety
- Restlessness
- Yawning
- Rapid heart rate and increased blood pressure
- Muscle cramps
- Sleep problems
- Hallucinations
- Multiple seizures, which can be fatal

The worst symptoms occur when the drug is stopped abruptly. Depressants need to be carefully tapered over time (up to a month) to avoid severe problems.

Resource Page 5.4: Hallucinogens¹

Origin

Peyote is a spineless cactus with small protrusions called buttons that have psychoactive properties. Mescaline is the principal active psychedelic compound in peyote (and in a few other varieties of cactus). Mescaline can also be chemically synthesized in a laboratory. Peyote is one of the oldest psychedelic agents known.

Psilocybin mushrooms are fungi that contain the psychoactive compounds psilocybin and psilocin.

LSD (d-lysergic acid diethylamide) is manufactured from lysergic acid, which is found in ergot, a fungus that grows on rye and other grains.

Appearance of Hallucinogens

Peyote: Small, gray-green buttons

Mescaline: Usually a white or brown powder in capsules

LSD: Manufactured as a liquid, then converted to different forms; tablets or capsules of varying sizes, shapes, and colors; liquid on blotter paper; powder

Modes of Administration of Hallucinogens

- Peyote buttons or psilocybin mushrooms can be chewed or brewed into tea.
- Mescaline or psilocybin also can be taken orally in capsule form.
- LSD is taken orally.

The psychoactive effects of hallucinogens begin within about 1 hour and last up to 12 hours.

Medical Uses of Hallucinogens

None

“Desirable” Effects of Hallucinogens

Effects vary widely based on dose size, setting, and the user’s expectations and personality (called “set and setting”):

- Heightened sensory experiences (e.g., brighter colors, sharper visual definition, increased hearing acuity, more distinguished taste)
- Vivid mental images and distorted vision

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

- Altered space and time perception
- Joy, exhilaration
- Distorted sense of body (feeling either weighed down or weightless)
- Loss of sense of reality; melding past experiences with present
- Preoccupation with trivial thoughts, experiences, or objects
- Intense emotions
- Altered sense of time and self
- Synesthesia: Experiences seem to cross over different senses, giving the user the feeling of hearing colors and seeing sounds
- Dreaminess
- Introspection
- Hallucinations

Side Effects of Hallucinogens

- Intense nausea and vomiting (very common with peyote)
- Appetite suppression
- Elevated body temperature and sweating
- Chills and shivering
- Highly adverse reactions ("bad trip"), including frightening hallucinations, confusion, disorientation, paranoia, agitation, depression, panic, and/or terror
- Difficulty focusing, maintaining attention, concentrating, and thinking
- Dilated pupils
- Increased body temperature
- Increased heart rate and blood pressure
- Sweating
- Loss of appetite
- Sleeplessness
- Dry mouth
- Tremors
- Difficult focusing, maintaining attention, concentrating, and thinking

Possible Medical Consequences With Chronic Hallucinogen Use

- Highly adverse reactions (“bad trip”), including frightening hallucinations, confusion, disorientation, paranoia, agitation, depression, panic, and/or terror
- Impaired reasoning and loss of judgment leading to extremely dangerous behavior
- Worsening symptoms of existing mental illness or causing earlier onset of psychosis in a susceptible individual
- Flashbacks or recurrences of certain aspects of the drug experience; flashbacks occur suddenly, often without warning, and may occur within a few days or more than a year after LSD use; in some individuals, the flashbacks can persist and cause significant distress or impairment in social or occupational functioning, a condition known as hallucinogen-induced persisting perceptual disorder
- Possible prolonged psychotic state similar to that of paranoid schizophrenia in susceptible individuals

Withdrawal Syndrome of Hallucinogens

None

Resource Page 5.5: Dissociative Anesthetics¹

Origin

Dissociative anesthetics include phencyclidine (PCP) and ketamine. Both are synthetic.

Appearance of Dissociative Anesthetics

PCP: White crystalline powder; often processed into a liquid, tablets, or capsules

Ketamine: Manufactured as a liquid; typically evaporated into a powder for illicit use

Modes of Administration of Dissociative Anesthetics

- Oral
- Sprinkled on marijuana and smoked
- Inhaled intranasally

Medical Uses of Dissociative Anesthetics

PCP and ketamine have been used as anesthetics in veterinary medicine. Ketamine is used in human medicine in some cases. PCP was never approved for human use because of extreme side effects.

“Desirable” Effects of Dissociative Anesthetics

- Both are dissociative drugs, meaning that they distort perceptions of sight and sound and produce feelings of detachment (dissociation) from the environment and self
- Feelings of strength and power
- Relaxation
- Mild euphoria

Side Effects of Dissociative Anesthetics

- Mood disturbances: anxiety and depression
- Shallow breathing and increased breathing rate
- Flushing
- Sweating
- Numbness in extremities

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

- Nausea and vomiting
- Loss of coordination
- Decreased pain response
- Blurred vision
- Delirium (hallucinations or disorientation)
- Increased heart rate and blood pressure
- Impaired motor function
- Numbness
- Depression
- Dizziness
- Anger, aggression, and violence

Possible Medical Consequences With Chronic Dissociative Anesthetic Use

- Seizures
- PCP causes symptoms that mimic schizophrenia, such as delusions, hallucinations, paranoia, disordered thinking, and a sensation of distance from one's environment
- Because PCP can have depressant effects, interactions with other depressants, such as alcohol and benzodiazepines, can lead to respiratory depression and coma
- People who have abused PCP for long periods have reported memory loss, difficulties with speech and thinking, depression, and weight loss; these symptoms can persist up to 1 year after stopping PCP abuse
- Severe depression with suicidal thoughts and attempts
- Injuries from accidents and fights

Withdrawal Syndrome of Dissociative Anesthetics

None known

Resource Page 5.6: Inhalants¹

Origin

Inhalants generally fall into the following four categories:

Volatile solvents: Liquids that vaporize at room temperature:

- Industrial or household products, including paint thinners or removers, degreasers, dry-cleaning fluids, gasoline, and lighter fluid
- Art or office supply solvents, including correction fluids, felt-tip marker fluid, electronic contact cleaners, and glue

Aerosols: Sprays that contain propellants and solvents:

- Household aerosol propellants in items such as spray paints, hair or deodorant sprays, fabric protector sprays, aerosol computer cleaning products, and vegetable oil sprays

Gases: Found in household or commercial products and used as medical anesthetics:

- Household or commercial products, including butane lighters and propane tanks, whipped cream aerosols or dispensers (whippets), and refrigerant gases
- Medical anesthetics, such as ether, chloroform, halothane, and nitrous oxide

Nitrites: A special class of inhalants that are used primarily as sexual enhancers

- Organic nitrites are volatiles that include cyclohexyl, butyl, and amyl nitrites, commonly known as “poppers”

Appearance of Inhalants

Varied

Mode of Administration of Inhalants

Inhaled in a variety of ways:

- Sniffing fumes directly from the container
- Spraying aerosols directly into the nose or mouth
- Placing an inhalant-soaked rag in the mouth
- Inhaling fumes from a balloon or a plastic or paper bag that contains the inhalant

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

The intoxication produced by inhalants usually lasts just a few minutes. Users often try to extend the “high” by continuing to inhale repeatedly over several hours.

Medical Uses of Inhalants

Mostly none, although:

- Amyl nitrite is still used in certain diagnostic medical procedures
- Nitrous oxide is used as an anesthetic, particularly for dental procedures

“Desirable” Effects of Inhalants

- Euphoria
- Giddiness
- Lessened inhibition and anxiety
- Hallucinations

Side Effects of Inhalants

- Headache
- Confusion
- Nausea and vomiting
- Drowsiness
- Slurred speech
- Lack of coordination

Possible Medical Consequences With Chronic Inhalant Use

- Hearing loss (spray paints, glues, de-waxers, dry-cleaning chemicals, correction fluids)
- Peripheral neuropathies or limb spasms (glues, gasoline, whipped cream dispensers, gas cylinders)
- Central nervous system or brain damage (spray paints, glues, de-waxers)
- Bone marrow damage (gasoline)
- Liver and kidney damage (correction fluids, dry-cleaning fluids)
- Blood oxygen depletion (varnish removers, paint thinners)

Long-term inhalant abuse can also break down myelin, a fatty tissue that surrounds and protects some nerve fibers. Damage to myelin can lead to muscle spasms and tremors or permanent difficulty with basic actions such as walking, bending, and talking. Sniffing highly concentrated amounts of the chemicals in solvents, butane, propane, or aerosol sprays can directly induce heart failure and death within minutes of a session of repeated inhalation, even in a single session by an otherwise healthy young person. High concentrations of inhalants may also cause death from suffocation by displacing oxygen in the lungs, causing the user to lose consciousness and stop breathing. Deliberately inhaling from a paper or plastic bag or in a closed area greatly increases the chances of suffocation.

Withdrawal Syndrome of Inhalants

None

Resource Page 5.7: Marijuana and Hashish¹

Origin

Natural; derived from the plant *Cannabis sativa*

Appearance of Marijuana and Hashish

Marijuana: Dry, shredded green and brown mix of flowers, stems, seeds, and leaves

Hashish: The concentrated, sticky resin of marijuana; can be pressed into cakes or further concentrated into oil

Modes of Administration of Marijuana and Hashish

- Smoked (in a pipe or rolled into cigarette papers or cigars). Hashish oil is typically dripped onto dry marijuana to increase potency. The effects of smoking are typically felt within a few minutes and generally wear off within 2 to 3 hours.
- Oral (mixed with food or brewed into tea). When substance is eaten, effects typically do not appear for 30 to 60 minutes but can last up to 6 hours.

Medical Uses of Marijuana and Hashish

In some countries, Marinol (a tablet) or smoking marijuana is sometimes used to treat glaucoma because it reduces pressure in the eyes. It is used to decrease nausea in patients receiving chemotherapy and to increase appetite in AIDS patients.

“Desirable” Effects of Marijuana and Hashish

- Physical relaxation, sedation
- Exaggerated mood
- Heightened empathy for others
- Heightened suggestibility
- Heightened novelty: even mundane objects seem interesting
- Giddiness
- Changes in sensory and time perception
- “Trailing” phenomenon (seeing afterimages of a moving object)
- Increased appetite

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

Side Effects of Marijuana and Hashish

- Increased heart rate and blood pressure
- Bloodshot eyes (resulting from increased blood flow through mucous membranes in the eyes)
- Decreased muscular coordination
- Poor depth perception and tracking (ability to follow a moving object)
- Lung irritation and coughing
- Difficulty thinking and solving problems
- Panic reactions (pounding heart, extreme anxiety and fear, sweating, dizziness)

Possible Medical Consequences With Chronic Marijuana and Hashish Use

- Respiratory problems (most severe in those who also smoke cigarettes), including:
 - Chronic cough and bronchitis
 - Damaged lung tissue
 - Increased phlegm production and reduced ability to clear it
 - Frequent respiratory illnesses
- Decreased cognitive/intellectual functioning
- Delayed emotional development
- Suppressed immune function that can lead to increased susceptibility to viral and bacterial infections and can accelerate progression of HIV/AIDS
- Problems with short-term memory and learning that can last for days or weeks after last use
- At high doses, acute psychotic reactions in susceptible individuals, including triggering chronic schizophrenia in those genetically predisposed
- Long-term use may lead to amotivational syndrome: reduced energy and ability to concentrate, reduced desire to work, reduced interest in social or other activities
- At high doses, marijuana may worsen clinical depression

Withdrawal Syndrome of Marijuana and Hashish

In addition to drug craving, people who use marijuana over a long term report:

- Irritability
- Sleeplessness
- Decreased appetite

Symptoms begin within about 1 day following abstinence, peak at 2 to 3 days, and subside within 1 or 2 weeks.

Withdrawal from marijuana is not physically dangerous and does not require treatment.

Resource Page 5.8: Miraa¹ (Khat)

Origin

Miraa is a plant containing *cathinone* and *cathine*, the active chemicals that alter the mood of the user.

Appearance of Miraa

Miraa/Khat (*Catha edulis* Forsk, *Celastraceae* family) is a leafy green shrub that can grow to tree size.

Modes of Administration of Miraa

- Fresh leaves and soft twigs are chewed
- Less commonly, it can be consumed as a tea or smoked

Medical Uses of Miraa

None

“Desirable” Effects of Miraa

- Mild euphoria
- Alertness
- Excitement
- Energy

Side Effects of Miraa

- Loss of appetite
- Sexual dysfunction
- Insomnia
- Gastrointestinal problems (such as constipation)
- Oral inflammation

¹. Australian Drug Foundation Drug Info Clearinghouse <http://www.druginfo.adf.org.au/drug-facts/drug-facts>
United Nations Office on Drugs and Crime. (2016). Terminology and Information on Drugs. United Nations, New York. Retrieved March 22, 2017, from <http://www.unodc.org/drugs/en/get-the-facts/types-of-drugs.html>
U.S. National Institute on Drug Abuse. (n.d.). Drugs of abuse information. Bethesda, MD: Author. Retrieved March 22, 2017, from <http://www.drugabuse.gov/drugpages/U.S.> University of Maryland Center for Substance Abuse Research http://www.cesar.umd.edu/cesar/drug_info.asp

Possible Medical Consequences With Chronic Miraa Use

- Oral cancer
- Depression
- Increase in severity of psychological problems
- If khat is used during pregnancy, the baby may be born smaller than other babies
- Chewing khat appears to reduce breast milk production

Withdrawal Syndrome of Miraa

Heavy khat chewers have been shown to experience withdrawal symptoms such as:

- Minor laziness
- Mild depression
- Nightmares
- Slight tremor
- Extreme tiredness and lack of energy
- Difficulty performing normal daily activities
- Slight trembling several days after having stopped chewing khat

Resource Page 5.9: Substances of Abuse, Summary

Substances: Category and Name	How Administered	Intoxication Effects/Potential Health Consequences
Category: Depressants		
Barbiturates Amytal Nembutal Phenobarbital Seconal	Swallowed, injected	Reduced anxiety, feeling of well-being, lowered inhibitions, slowed pulse and breathing, lowered blood pressure, poor concentration/ Fatigue; confusion; impaired coordination, memory, and judgment; addiction; respiratory depression and arrest; death
Benzodiazepines Ativan Halcion Librium Rohypnol Valium Xanax	Swallowed, injected (Rohypnol can be snorted)	For barbiturates—Sedation, drowsiness/Depression, unusual excitement, fever, irritability, poor judgment, slurred speech, dizziness, life-threatening withdrawal For benzodiazepines—Sedation, drowsiness/Dizziness
Gamma-Hydroxybutyrate (GHB)	Swallowed	For GHB—Drowsiness/Nausea and vomiting, headache, loss of consciousness, loss of reflexes, seizures, coma, death
Methaqualone Parest Quaalude Sopor	Swallowed, injected	For methaqualone—Euphoria/Depression, poor reflexes, slurred speech, coma
Category: Hallucinogens		
Lysergic acid diethylamide (LSD)	Swallowed, absorbed through mouth tissues	Altered states of perception and feeling, nausea/Persisting perception disorder (flashbacks)
Mescaline Peyote	Swallowed, smoked	For LSD and mescaline—Increased body temperature, heart rate, and blood pressure; loss of appetite; sleeplessness; numbness; weakness; tremors
Psilocybin "Magic mushroom"	Swallowed	For LSD—Persistent mental disorders For psilocybin—Nervousness, paranoia

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Substances: Category and Name	How Administered	Intoxication Effects/Potential Health Consequences
Category: Narcotics—Opioids and Morphine Derivatives		
Codeine Empirin with codeine Fiorinal with codeine Robitussin A-C Tylenol with codeine	Injected, swallowed	Pain relief, euphoria, drowsiness/Nausea, constipation, confusion, sedation, respiratory depression and arrest, tolerance, addiction, unconsciousness, coma, death For codeine—Less analgesia, sedation, respiratory depression than morphine For heroin—Staggering gait
Fentanyl and fentanyl analogs Actiq Duragesic Sublimaze	Injected, smoked, snorted	
Diacetyl-morphine Heroin	Injected, smoked, snorted	
Morphine Roxanol, Duramorph	Injected, swallowed, smoked	
Opium Laudanum Paregoric	Swallowed, smoked	
Oxycodone HCL OxyContin	Swallowed, snorted, injected	
Hydrocodone bitartrate, acetaminophen Vicodin	Swallowed	

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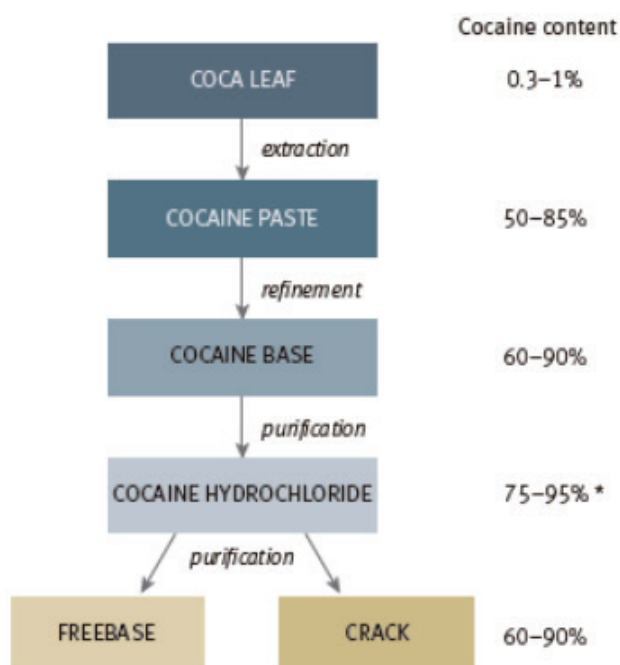
Substances: Category and Name	How Administered	Intoxication Effects/Potential Health Consequences
Category: Stimulants		
Amphetamine Bupropion Dextroamphetamine	Injected, swallowed, smoked, snorted	Increased heart rate, blood pressure, and metabolism; feelings of exhilaration and energy; increased mental alertness/Rapid or irregular heartbeat, reduced appetite, weight loss, heart failure, nervousness, insomnia
Cocaine	Injected, smoked, snorted	For amphetamine—Rapid breathing/Tremors, loss of coordination, irritability, anxiousness, restlessness, delirium, panic, paranoia, impulsive behavior, aggressiveness, tolerance, addiction, psychosis
M D M A (methylenedioxymethamphetamine) Ecstasy	Swallowed	For cocaine—Increased temperature/Chest pain, respiratory failure, nausea, abdominal pain, strokes, seizures, headaches, malnutrition, panic attacks
Methamphetamine Desoxyn	Injected, swallowed, smoked, snorted	For MDMA—Mild hallucinogenic effects, increased tactile sensitivity, empathic feelings/Impaired memory and learning, hyperthermia, cardiac toxicity, renal failure, liver toxicity
Methylphenidate Ritalin	Injected, swallowed, snorted	For methamphetamine—Aggression, violence, psychotic behavior/Memory loss, cardiac and neurological damage, impaired memory and learning, tolerance, addiction
Nicotine	Smoked, snorted, taken in snuff and chew/spit tobacco	For nicotine—Adverse pregnancy outcomes, chronic lung disease, cardiovascular disease, stroke, cancer, tolerance, addiction
Caffeine	Swallowed	

(continued on next page)

Substances: Category and Name	How Administered	Intoxication Effects/Potential Health Consequences
Category: Other		
Inhalants Gases (butane, propane, aerosol propellants, nitrous oxide) Nitrites (isoamyl, isobutyl, cyclohexyl) Solvents (paint thinners, gasoline, glues)	Inhaled through nose or mouth	Stimulation, loss of inhibition, headache, nausea or vomiting, slurred speech, loss of motor coordination, wheezing/Unconsciousness, cramps, weight loss, muscle weakness, depression, memory impairment, damage to cardiovascular and nervous systems, sudden death
Cannabinoids Hashish Marijuana	Swallowed, smoked	Euphoria, slowed thinking and reaction time, confusion, impaired balance and coordination/Cough and frequent respiratory infections, impaired memory and learning, increased heart rate, anxiety, panic attacks, tolerance, addiction
Dissociative anesthetics Ketalar SV Ketamine	Injected, smoked, inhaled	Increased heart rate and blood pressure, impaired motor function/ Memory loss, numbness, nausea and vomiting
Dissociative anesthetics Phencyclidine (PCP) and analogs	Swallowed, smoked	For ketamine (at high doses)—Delirium, depression, respiratory depression and arrest For PCP and analogs—Possible decrease in blood pressure and heart rate, panic, aggression, violence/Loss of appetite, depression
Miraa Khat	Chewed, swallowed	Excitement and alertness/Rapid heart rate, increased blood pressure, chronic constipation, dehydration, forgetfulness, talkativeness, sexual dysfunction

Resource Page 5.9: Cocaine

Production of cocaine



The diagram shows the general processes by which coca leaf is transformed into cocaine products in their various forms.¹

What is called cocaine paste is known as “pasta base” or “paco” in some countries of the southern cone of America. The illicit production processes may vary from one laboratory to another; there are at least five reported methods for obtaining coca paste, cocaine base or cocaine hydrochloride. Illicit supplies of cocaine are often heavily adulterated with a variety of “cutting agents” and may contain as little as 10 per cent cocaine.

COCA LEAF DERIVATIVES

Cocaine Base Paste

Cocaine Base Paste (CBP) is an intermediate by-product in the production of cocaine hydrochloride obtained from coca leaves, through various chemical production processes. It is a form of alkaline or basic cocaine and its volatilization point grants it the property to be smoked. Its appearance is that of a yellowish or yellowed white powder, depending on the substance with which it has been mixed. International reports indicate a composition of 40 to 85% cocaine alkaloid, with the addition of impurities, solvents produced during preparation, and adulterants.

In the jargon of CBP users, it is often referred to as “paste”, “base”, “can”, among others. It is smoked using different devices, such as pipes manufactured with almost any material

1. ONU (2018) Terminology and Information on Drugs. NY: ONU

and various utensils (cans, inhalers, etc.), in the bottom of which tobacco ashes are placed, in order to maintain heat for its volatilization; it is sometimes smoked as a cigarette mixed with marijuana ("basoco") or with tobacco ("tabasoco"). The CBP is illicitly marketed in "doses" called "medium" or "chasqui", which vary in terms of cost, proportion and quantity of its components, usually ranging from 0.2 to 0.5 grams.

Cocaine hydrochloride

Product resulting from the chemical processing of coca leaves, with the appearance of white powder, known as "merca", "frula", "white", among other denominations. It is a form of acidic cocaine, which can be soluble in water and can therefore be used intravenously. It is mainly consumed intranasally; with the powder being inhaled; action that is called in slang terms "snorting", "pulling", "taking". Cocaine hydrochloride loses its properties when smoked, as the heat denatures it. However, there is a form of marijuana use via cigarette which is associated with the cocaine hydrochloride (snow), that has no psychoactive effects beyond those of marijuana.

Cocaine base or free base

"Cocaine base or freebase" is obtained by adding a basic solution (sodium bicarbonate, sodium hydroxide or ammonia) to the cocaine hydrochloride, which is then filtered by the precipitate.

Another modality is to obtain the base by dissolving it with ether, and its modality of consumption consists of inhaling the free base vapors extracted from the hydrochloride through the addition of volatile solvents at very high temperature (800 C), for which propane lighters need to be used.

Crack

"Crack", which has spread across Brazil and other countries of Latin America and the USA, is obtained through a production process that consists of adding a basic solution, and heating it. It is obtained by adding ammonia to an aqueous solution of cocaine hydrochloride, in the presence of baking soda to alkalize it.

The preparation is heated to 98 C, causing the precipitation of the free base in the form of paste, which once dried has a porcelain-like appearance and consistency; this is then ground into thick scales. The crack is heated and then inhaled in pipe-shaped containers or sometimes pulverized and smoked in a mixture with tobacco or marijuana. The name crack comes from the cracking noise that crystals produce when heated.

Adulterants

Both cocaine hydrochloride and smokable cocaine can be adulterated with substances that mimic some of its stimulating (amphetamines, caffeine or other sympathomimetic agents) and anesthetic effects (lidocaine, procaine and benzocaine), which boost the toxicity of cocaine. Moreover, in recent years the presence of levamisole, an anthelmintic for veterinary use, has been detected, reporting depletion of white blood cells agranulocytosis (agranulocytosis) with serious infectious complications. Depletion of white blood cells can lead to a compromised immune system leaving the body open to infections and diseases, including Covid-19. Studies on animals have also shown that levamisole increases the concentration of dopamine in the central nervous system.

Module 5—Substances of Abuse: Characteristics and Consequences, Summary

Review

- The meaning of the word drug differs depending on perspective:
 - In medicine the term drug refers to any substance with the potential to prevent or cure a disease or the potential to enhance physical or mental well-being.
 - In pharmacology (the study of drugs and drug action), the term refers to any chemical agent that alters the biochemical or physiological processes of body tissues or organisms.
 - In common usage, the term drug often refers to a substance that is used for nonmedical (e.g., recreational) reasons.
- To review, the way a drug affects a person depends in part on the type of drug and how it affects the central nervous system (CNS):
 - Stimulants increase the activity of the CNS. They tend to increase heart rate and breathing and offer a sense of excited euphoria.
 - Depressants and opioids (also called narcotics) decrease the activity of the CNS. They tend to decrease heart rate and breathing and offer a relaxed, sometimes sleepy, sense of well-being or euphoria.
 - Hallucinogens produce a spectrum of vivid sensory distortions and markedly alter mood and thinking.
- The classification system is intended as a general guide and that not all drugs fit neatly into the four classes. For example:
 - Cannabis (marijuana, hashish); Miraa (khat);
 - Inhalants (solvents, gases, nitrites); and
 - Dissociative anesthetics (PCP, ketamine).

Consequences of drug use

- In addition to the physical consequences of specific drugs discussed in the presentations, drug use and addiction have major consequences for the individual, family, community, and society.
- Individuals with addiction may suffer a range of consequences:
 - Medical;
 - Legal;
 - Social; and
 - Economic.

- Drug use and addiction have major consequences for the individual, family, community, and society.
- Individuals with addiction may suffer a range of consequences:
 - Individuals who have addiction are more likely to be injured in fights or accidents of all kinds.
 - Drug use may trigger or make mental disorders worse, particularly in individuals with specific vulnerabilities.
 - Heavy drug use often compromise a person's immune system, making him or her more susceptible to disease.
 - People who use drugs are much more likely than those who don't to contract major diseases such as HIV/AIDS, hepatitis, tuberculosis, and other infectious diseases.
 - This is true even if the person does not inject drugs, because the inhibition-lowering and negative cognitive effects of drug use often lead to increased risk-taking behavior.

Specific substances: Characteristics, effects, and physical consequences

Resource Pages 5.1–5.9 provide information about specific drugs

Differing Physiological Responses: Women

- Studies have demonstrated that women are more sensitive to the consumption and long-term effects of alcohol and drugs than are men. Women experience an effect called “telescoping,” meaning they tend to progress faster than do men from initial use to addiction and to substance-related consequences, even when using a similar or smaller amount of substances.¹
- For example, women who drink are at greater risk than are men for developing cirrhosis and other medical problems, and they develop these problems sooner than do men. One reason for this appears to be that women have less water in their bodies than do men, and they metabolize alcohol in a way that leads to higher blood alcohol levels with comparable intake and body weight.
- Much of the research on women has been done regarding alcohol consumption, but newer research suggests that there is a similar pattern of rapid progression with illicit drugs. For example, a study of women in treatment found that women had used opioids and cannabis for fewer years than men did before entering treatment. The women also reported more severe psychiatric, medical, and employment complications than did men.²

1. Center for Substance Abuse Treatment. Substance Abuse Treatment: Addressing the Specific Needs of Women. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 2009. (Treatment Improvement Protocol (TIP) Series, No. 51.) Chapter 3: Physiological Effects of Alcohol, Drugs, and Tobacco on Women.

2. Hernandez-Avila, C. A., Rounsaville, B. J., & Kranzler, H. R. (2004). Opioid-, cannabis- and alcohol-dependent women show more rapid progression to substance abuse treatment. *Drug and Alcohol Dependence*, 74(3), 265.

Fetal Effects

- Fetal effects generally range from low birth weight to developmental behavioral and cognitive deficits.
- Impaired attention, language, and learning skills, as well as behavioral problems, have been seen in children exposed to cocaine and marijuana.
- Methamphetamine exposure has been associated with fetal growth restriction, decreased arousal, and poor quality of movement in infants.
- Untreated heroin exposure without prenatal care could result in infants needing to go through painful withdrawal after birth. Heroin exposure also has been associated with low birth weight—an important risk factor for delayed development.
- Neonatal Abstinence Syndrome (NAS) can be seen with the use of opioids, alcohol, caffeine and some sedatives.
- Symptoms of NAS in a newborn can develop immediately or up to 14 days after birth.
- Some of these symptoms include blotchy skin coloring, diarrhea, excessive or high-pitched crying, fever, increased heart rate, irritability, poor feeding, rapid breathing, seizures, sleep problems, slow weight gain, trembling, vomiting.

Differing Physiological Responses: Youth

- Early drug use increases a person's chances of developing substance use-related disorders.
- Young people also are particularly vulnerable to physical and social problems related to substance use. Some of this vulnerability is due to the effects of substances on a still-maturing brain and body.
- Drug and alcohol abuse can disrupt brain function in areas critical to motivation, memory, learning, judgment, and behavior control. All of these functions continue to mature into adulthood. So, it is not surprising that teens who abuse alcohol and other drugs often have family and school problems, poor academic performance, and health-related problems (including mental health). They may also be involved in the criminal justice system.
- One of the brain areas still maturing during adolescence is the prefrontal cortex—the part of the brain that enables us to assess situations, make sound decisions, and keep emotions and desires under control.
- The fact that this critical part of an adolescent's brain is still a work in progress puts them at increased risk for making poor decisions (such as trying drugs or continuing drug abuse).
- Introducing drugs while the brain and body are developing may have profound and long-lasting consequences.

Consequences of drug use : Society

- Drug use and addiction also affect society as a whole, through:
 - Decreased productivity;
 - Costs of incarceration and residential treatment centers;
 - Increased medical costs;
 - Social and financial costs of drug-related crime;
 - Increased spread of infectious disease; and
 - High rates of HIV/AIDS around the world.

Family systems

- Addiction is both an individual disease and a family disease.
- A family system is defined as the unique interaction and relationship of each family member to one another. Families are perhaps the most complex social system we have.
- In drug dependence, family-based therapies have shown their effectiveness in increasing the engagement of patients and their families with treatment programs, as well as in enhancing adherence to treatment (increase retention) and reducing post-treatment substance use, improving family functioning and facilitating the patients' normalization in terms of their social integration.
- The study of the effectiveness of family-centered therapies presents difficulties due to methodological problems in controlled studies that have been carried out. These types of therapies have shown better results in interventions in adolescents with substance use problems. The most researched therapies in the field of addictive behaviors are Brief Strategic Family Therapy, Multidimensional Family Therapy, and Multisystemic Family Therapy.¹
- They give an important or central role to the family as part of the solution of the substance use problem given the interrelationships between its members, and because substance use is sometimes a sign of distress in the family functioning, and of living with many persons with substance use disorders within a family, etc.
- Families of people with SUD may have various intervention needs. It is important that counselors identify the family's resources and potential to promote recovery processes.
- Families and family-run organizations are vital components of recovery-oriented service systems.

1. Becoña, E. y Cortés, M. (Coord.) (2008) Guía Clínica de Intervención Psicológica en Adicciones. Sociedad Científica Española de Estudios Sobre Alcohol, el Alcoholismo y Otras Toxicomanías (SOCIDROGALCOHOL), Barcelona)

- Family members can train and support other families—sharing lived experiences and insights that instill hope, increase understanding, and contribute to family systems transformation.
- There is not a one-size-fits-all solution for helping a family member living with a SUD, but family support can play a significant role in their recovery.
- It is important for family members/caregivers to prioritize their own health when supporting the recovery of family member(s) with SUD.²
- The term family has diverse meanings for different people and can be defined in multiple different ways.
- Groups of academics, such as: anthropologists, sociologists, psychologists, economists, can define and study the family from their own perspective. People from different countries or cultures can also define family differently. For example, in the United States, Canada, and many European countries, the norm for defining a family is the nuclear family, which is understood as mother, father and children. In most other parts of the world the family is defined as the extended family, which includes grandparents, aunts, uncles, cousins, and others.¹
- Academicians agree that families can in simple terms be defined by their structure—who is considered part of the family? - and by their function, what is the purpose of the family and what does a family do?.
- It is clear that a single definition of family cannot be suitable to encompass all types of families and for all purposes.
- There is no single, immutable definition of what a family is. Definitions are affected by cultures and belief systems, and since cultures and beliefs change over time, family definitions are not static.²
- When it comes to understanding how a family functions, it is important that the counselor can know and be sensitive to culture in his/her comments and judgments.
- These questions can be useful for this process:
 - To what extent is the dynamic I am observing in this family, and which is divergent from mainstream norms, a function of the disease or a different cultural background?
 - How is the family arranged hierarchically? Democratically? What are the communication patterns within this structure?
 - How well is this family functioning? That is, to what extent can the family meet its own goals?

1. This material has been taken, with adaptations, from the following source: International Center for Credentialing and Education of Addiction Professionals (ICCE) (2015). Prevention for Substance Use Disorder. Trainer Manual. Training Curriculum Series 1. Universal Prevention Curriculum for Substance Use Disorder (UTC). Sri Lanka. Department of State, EUA. Colombo Plan.

2. (Center for Substance Abuse Treatment. Substance Abuse Treatment and Family Therapy. A Treatment Improvement Protocol (TIP) Series. Publication No. 39. "DHHS" (SMA) 04-3957. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2004).

- What are the culture's prescribed roles for each family member? Who are the appropriately defined "power figures" in the family?
- Some of the usual forms in which families are defined are:
 - Kinship, birth relationships – which means or refers to people who are related by genes.
 - Families come together through marriage. The person is not related to his/her spouse by birth but, usually, no one disputes that husbands are part of the same family.
 - Families are sometimes defined by the people who live together in the same house.
 - It is possible to include in a family those people who have financial obligations to each other and we generally consider as a family those people who are educating or helping to raise children or others in the group.
- In Western societies such as the United States, Canada, United Kingdom and European countries, the term "family" usually means or refers to the nuclear family, which includes mother, father and one or more children. Even so, nuclear families can be different; some can include two biological caregivers, others can include one or two adopted children, and some can be foster families; that is, families that are raising children who have lost both caregivers or whose caregivers have lost custody for some reason.
- Blended families include members of two or more previous families. In the United States, blended families usually form when caregivers with children divorce and remarry. Rising divorce rates and people who have remarried in the United States over the past decade have contributed to the increased number of blended families.
- A single parent family can be made up of either the father or the mother, who is the only person responsible for raising a child. Some of these families are by choice, while others are due to circumstances, such as divorce or death of a parent. Rates for single-parent families have risen worldwide in recent decades.
- The structure of families has changed over time, around the world. Although most families are still made up of families involving two caregivers, they are becoming less common in different parts of the world. In Asia and the Middle East, children under the age of 18 are more likely to live in families made up of two caregivers than in other forms of family. On the other hand, in the Americas, Europe, Oceania and sub-Saharan Africa, children are more likely to live with a single parent or without any parents.
- Extended families are made up of individuals who would not be considered as part of the "nuclear family." For example, it could include grandparents on both sides, wife/mother, husband/father, and children, aunts, siblings or half-siblings, cousins, nieces, and any other spouses' relatives.
- Same-sex parented families have long been invisible to wider society, but are increasingly recognized around the world as families which correspond to that of nuclear families.

Defining the Family as a System

- **SYSTEM:** it is a set of related parts. What defines that set of parts as a SYSTEM are the relationships that those parts establish with each other.
- The family should be seen as a complete organism, rather than the sum of its parts. During a family's long stay together, family members develop common patterns of behavior after having repeated them thousands of times. In this way, each individual member has become used to acting, reacting and responding in a specific way within the family.¹ The actions of each member provoke a specific reaction in another family member, once and again, over time. These repetitive sequences give the family its own shape and style. Patterns that develop in a family shape the behaviors and styles of each of its members.
- **Structure:** It refers to family interaction patterns. Family interaction patterns are the usual, repeated behaviors that family members maintain with each other. More specifically, family interaction patterns consist of behavioral chains that are linked together which take place between family members. According to Minuchin, the family structure is the invisible set of functional demands that organizes the ways in which family members interact. A family is a system that operates through transactional guidelines. Repeated transactions establish the guidelines about how, when, and who to relate to, and these guidelines underpin the system.
- **Hierarchy:** The role of power and its structures in families is defined. The hierarchy defines or determines the distribution of power, which helps maintain the system's structure.
- **Roles:** Roles refer to a group's expectations and standards regarding the position and behavior of an individual in the group. Hence, when human beings take part in a particular context, they tend to take certain roles.
- **Family Rules:** They are spoken or implicit (everyone knows them but they are not verbalized). Since the family is an open system, it is constantly exchanging information with its surroundings; such information becomes the input which affects the family balance to a greater or lesser degree. How the family reacts to new information depends on several variables.
- This ongoing exchange of information helps the system in a constant process of balance, in its search for homeostasis, which depends on the norms present in the system. These norms translate into rules that regulate members' behaviors, among them and with other systems surrounding them. These rules can be easily identified by observing the family interaction patterns.
- The rules would then be: relationship agreements that stipulate and limit the individuals' behavior in a wide variety of content areas, organizing their interaction into a reasonably stable system.

1. (Ortiz, D. (2008) La terapia familiar sistémica. Universidad Politécnica Salesiana, Cuenca, Ecuador)

- **Boundaries:** Relationships between members and between family and society are regulated by boundaries, also called limits. The limits would be identifiable by the different behavior rules applicable to the different family subsystems.
- Throughout the family development, the family itself lays down a set of rules, patterns of functioning and beliefs about itself that help differentiate it from other families. When a continuum with respect to boundaries is established, it is possible to state that they can vary from rigid, flexible, to diffuse boundaries.
- When boundaries are too diffuse there is a great emphasis on family unity with poor interaction with the environment. When the boundaries are too rigid there is a loss of integrity, so the unit looks scattered and the members are separated. Flexible limits allow the system to adapt to both internal and external needs, which appear as the system progresses in its evolution.¹

Multi-tensioned/ Multi-stressed Families

- Families who are in situations of clinical difficulties, and who are overwhelmed by problems and crises; as is often the case in families where one or more of its members misuses substances or has a substance use disorder.
- The concept of “Multi-Stressed Families” tends to focus on external tensions affecting families and supports the separation between people and the problems of their lives.¹
- This description better captures the tensions and pressures that operate in families facing various difficulties in their lives. “Multi-stressed” recognizes the difficult realities of their lives, but it also provides guidance on the abilities, skills, technical knowledge which families can access to address those tensions.
- Families are not static and although they tend to develop behavior patterns, this does not mean that these are permanent.
- Identifying patterns of family functioning can help recognize and value the strengths and resources of the family system, as well as highlight the needs and wishes of the family system and its members.
- What is considered functional can vary from culture to culture, but in general the following functional and dysfunctional behaviors can be identified:
- When a family functions with love, respect, and care, it is easier for its members to pay attention when someone needs to be heard, they can express words of affection, recognize efforts and rejoice in the achievements of others. They feel united, but at the same time recognize the individuality of each one; therefore, they can have different interests, opinions, skills and ways of being different.
- When there is not enough trust in a family and the motivations of others are doubted, people do not feel the freedom to be themselves and try to avoid expressing what they think, feel or want, because there is some fear of being criticized, not accepted

1. Madsen, W. (2007) Collaborative Therapy with Multi-Stressed Families. Second Edition. New York: The Guilford Press)

and rejected. This has an impact on the wellbeing, satisfaction and development of each family member.

- Let's remember that it's not that families are fully functional or dysfunctional, but that there is a variety of degrees of functionality. For example, at certain times a family may maintain good communication, be affectionate, even handle a conflict constructively, and in the same family at another time, when a conflict arises, they can say hurtful things to each other.
- In the case of a family with a predominance of functional family patterns, if a member develops a SUD, although the family system might become unbalanced for a while, it will tend to restore balance.

Supportive Behaviors	Undermining Behaviors
1. Operate out of love, respect, concern and care.	1. They tend to relate to fear, mistrust and low esteem.
2. They trust others; therefore, they feel free to express their needs, share their feelings, manage and negotiate disagreements and conflicts.	2. There is fear of rejection; therefore, they find it difficult to express their needs, feelings, and manage disagreements and conflicts.
3. They offer opportunities for growth for all family members.	3. They experience disruptions in emotional development, especially in children and adolescents.
4. Adults are close by, share authority, and support each other. At least one parent is safe and responsible.	4. Adults tend to enter into power struggles and contradict each other; they are controlling and indifferent.
5. They create and maintain an order. They have clear and distinct limits. The rules and guidelines are clear, consistent. They know what to expect from others and what is expected of them.	5. Boundaries and rules are unclear, rigid and/or inconsistent, which can lead to confusion, insecurity and/or manipulation.
6. When facing crises, they seek to restore balance: • Problem-solving and decision-making skills. • They cooperate and work together.	6. When facing crises, they learn to survive, they protect themselves by avoiding, assaulting, blaming themselves. If a member develops a SUD, they might tend to focus virtually all of their attention on him or her.

MODULE 6

INTEGRATING LEARNING INTO PRACTICE

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Content and Timeline	
Activity	Time
Introduction and exercise: Developing a practice integration plan	75 minutes
<i>Break</i>	<i>15 minutes</i>
Learning assessment competition	30 minutes
Training evaluation	15 minutes
Program completion ceremony and socializing	30+ minutes

Module 6 Goals and Objective

Training goals

- To encourage participants to think about resources, barriers, and strategies for change; and
- To provide an opportunity to develop a personal practice integration plan.

Learning objective

Participants who complete Module 6 will have developed a personal practice integration plan.

Resource Page 6.1: Practice Integration Plan

1. The most important thing I learned from this training, and don't want to forget, is:

2. Changes I will make in my practice based on what I have learned are:

3. Some things that could interfere with my plans are (e.g., anticipated barriers):

4. Ways I could overcome these barriers include:

5. The following people (include supervisors, potential mentors, and so on) and resources (further training, reading) could help me in the following ways:

<i>Person or Resource</i>	<i>Possible Ways To Help</i>

APPENDIX A—GLOSSARY

addiction	A chronic, relapsing brain disease characterized by compulsive drug seeking and use, despite harmful consequences; also known as psychological dependence.
blood–brain barrier	A protective barrier made up of a series of tightly pressed-together cells that allows for the passage of only certain chemicals into the brain.
central nervous system	That part of the nervous system that consists of the brain and spinal cord.
chronic disease	A disease that is long lasting and that cannot be cured but can be managed.
detoxification	The process of eliminating all psychoactive substances from a person’s body.
disease	Any alteration of the normal structure or function of any body part, organ, or system that can be identified by a characteristic set of symptoms and signs.
etiological agent	The cause (or one of the causes) of a disease.
family system	The unique interaction and relationship of each family member to one another; perhaps the most complex social system humans have.
half-life	The amount of time it takes to eliminate half of the original dose of a substance from the body.
lapse or slip	A brief, often one-time, return to drug use.
neuron	A nerve cell in the brain that sends messages to and receives messages from other cells.
neurotransmitters	Chemicals that send messages from one neuron to another in the brain.
pathogenesis	The progression of a disease from its origins through its critical development and expected outcomes.
peripheral nervous system	Includes all the nerves going to your arms, legs, hands, and feet; basically all of the nerve systems outside the central nervous system.
pharmacology	A branch of science that studies the effect of psychoactive substances on the brain and body.

physiological dependence	A state of adaptation to a specific psychoactive substance characterized by the emergence of a withdrawal syndrome during abstinence, which may be relieved in total or in part by taking more of the substance.
psychoactive substances	Drugs or medicines that affect the body's central nervous system and change how people behave or perceive what is happening around them.
relapse	A complete return to using psychoactive substance in the same way the person did before he or she quit.
reward circuit	A linked group of brain structures that provide reward (including pleasure) for life-sustaining activities (like eating), ensuring that these activities are repeated.
social stigma	A mark, a sign, a deeply discrediting and dishonorable attribute that reduces someone from a whole and usual person to a tainted, discounted one
Substance use disorders	occur when the recurrent use of alcohol and/or drugs causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home
synapse or synaptic cleft	The space between neurons; neurotransmitters pass through this space in the process of moving from one neuron to another.
tolerance	The decreased effect produced after the same amount of a psychoactive substance is repeatedly administered or when increasingly larger amounts are needed to get the same effect experienced with the original amount of a psychoactive substance.
withdrawal syndrome	Signs and symptoms that occur when a person stops using a psychoactive substance on which he or she is dependent.

¹Wikipedia. Retrieved October 24, 2010, from http://en.wikipedia.org/wiki/Social_stigma

APPENDIX B—RESOURCES

Global Drug Use Statistics

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Drug Classes/Drug Facts

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Women

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